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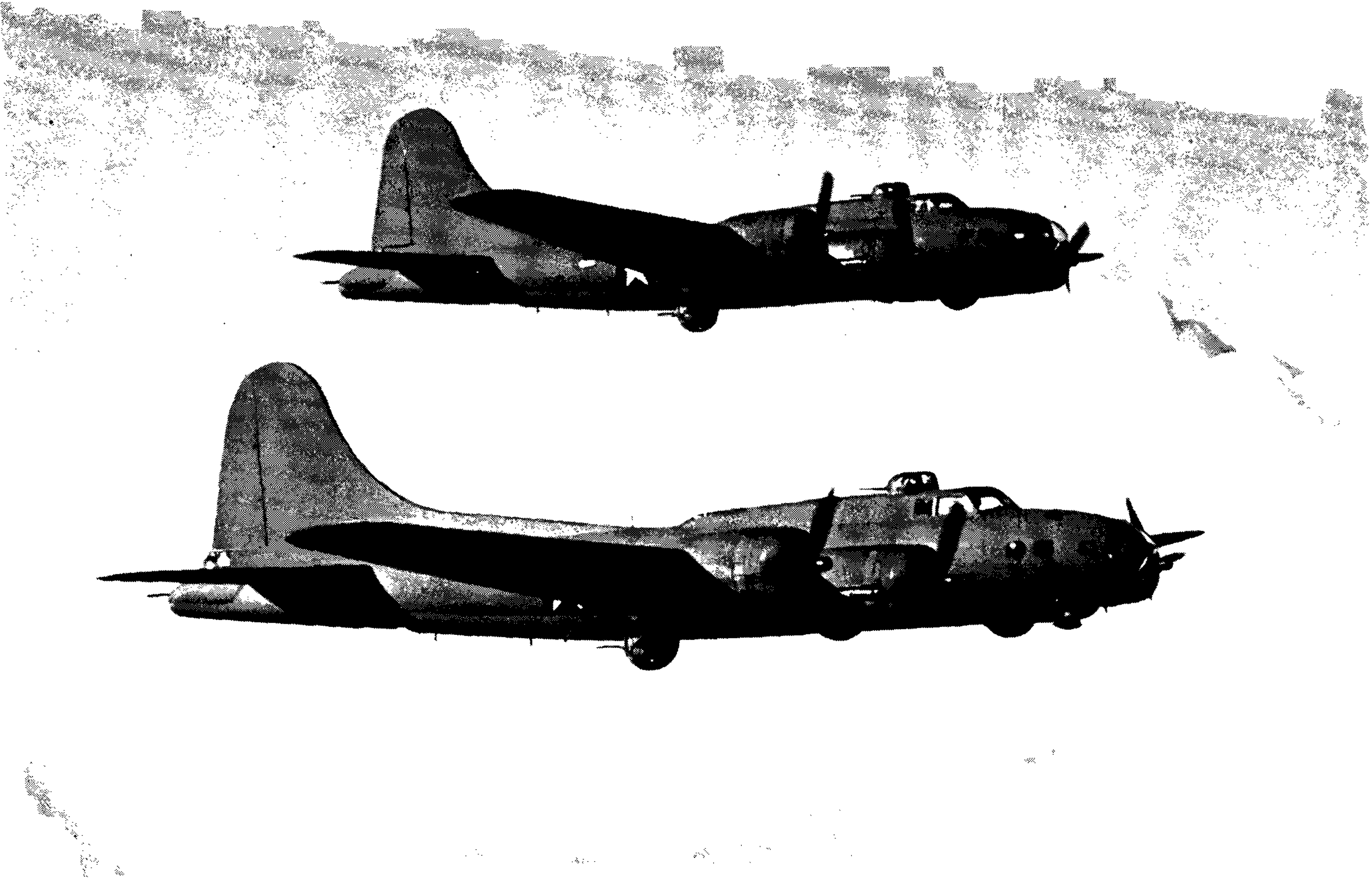
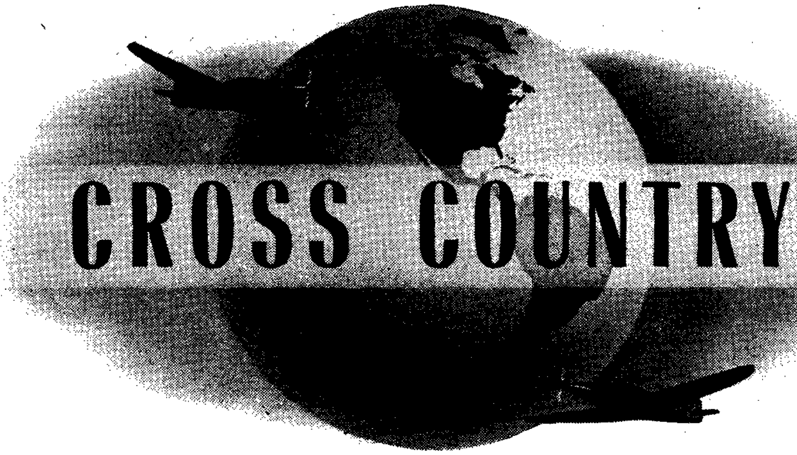
AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

JANUARY 1944

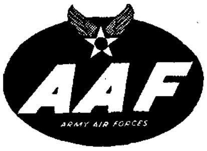




CROSS COUNTRY

For certain special purposes, a new emblem is being used by the Army Air Forces. It first made its appearance in material pertaining to aviation cadet procurement—posters, booklets and advertisements—and more recently, it has been reproduced on the curtain and souvenir programs of the AAF stage production, "Winged Victory." (*See Page 36.*)

The new insignia supplements but does not replace the familiar golden wings and white star on the circular blue background now used as a patch on the left sleeve of the uniform. The present sleeve patch remains official.



Chief advantage of the new design is its ready identification as an Army Air Forces emblem. It is to be used in cases where recognition by the untrained eye is important. In the new emblem the blue background becomes elliptical and the wings extend beyond the top of the ellipse. The letters AAF appear across the center and the words Army Air Forces are printed at the bottom.

ARMS AND SERVICES

You will notice that the back cover of this issue carries a letter from General Arnold to all AAF personnel, announcing that the War Department has authorized the elimination of arms and services branch distinctions in the AAF. He terms the authorization "a most important milestone for the Army Air Forces."

Approximately one-third of the officers and enlisted men now serving with the Army Air Forces and theatre Air Forces have arm or service designations other than Air Corps.

To carry out the War Department authorization, a study looking to the orderly conversion to Air Corps of the AAF arms and services personnel—ASWAAF personnel, as they are known throughout the service—has been undertaken by a committee headed by Brig. Gen. Byron E. Gates, Chief of Management Control.

The committee, known as the AAF Arm and Service Integration Committee, was created by an AAF memorandum dated November 9. Its mission is "to facilitate and expedite the transfer of ASWAAF personnel to the Air Corps and to facilitate the integration of ASWAAF units and organizations into functionalized AAF units and organizations both in the continental United States and overseas." The first action taken by the committee was to recommend the detailing of all arm and service officers into the Air Corps.

In addition to General Gates, the committee membership consists of representatives of various Headquarters offices, including the chiefs of the several AAF arms and services affected: the Air Chemical Officer, the Air Engineer, the Air Adjutant General, the Air Quartermaster, the Air Ordnance Officer, the Air Finance Officer, the Air Judge Advocate, the Air Provost Marshal, the Air Surgeon and the Air Communications Officer.

Among other things, the removal of branch distinctions is expected to eliminate overlapping and duplicating activities and bring about a consolidation of similar activities. Examples of duplications and expected consolidations are in supply, maintenance and administrative activities, now carried on separately by each arm or service organization within the Army Air Forces. It will mean, also, that the number of special types of units can be reduced and that command channels in the AAF can be simplified.

In his letter General Arnold assures ASWAAF personnel that the job of conversion and integration would be done carefully and thoroughly over a period of time. He also assures them that their special skills will be utilized to the utmost and that their opportunities for service and advancement will be broadened and enhanced, limited only by the individuals' abilities.

All ASWAAF personnel are affected by the integration program except medical personnel and chaplains, who according to current indications will continue in their present status.

REPRINTS OF ORGANIZATIONAL CHART

On the center pages of AIR FORCE this month you will find an organizational chart of the Army Air Forces, presented to provide AAF personnel with a ready reference to the organization and recent changes in command. Additional prints of this chart have been made available through The Service Division, AIR FORCE Editorial Office, 101 Park Avenue, New

HAPPY NEW YEAR TO ADOLF AND TOJO
Stan Ekman

York 17, N. Y., to avoid the lifting of the chart from the magazine. Publication of an AAF organizational chart in the May issue resulted in thousands of requests for reprints, which were filled by this office. We are ready to provide similar service this time.

By the Seat of His Pants

We are told of a Chinese flyer and a pilot of the 14th Air Force who spent two days trying to figure out the chicken scratches on the instrument dials of a captured Japanese plane. After this period of concentration two heads were even more bewildered than one. The Chinese pilot came to the conclusion that he knew as little Japanese as English—and the AAF officer topped him by remaining ignorant of both Chinese and Japanese. With a fine show of impatience, the American climbed into the plane and flew away.

The B-29

The first official word on the army's newest super-bomber, the B-29, has been revealed by General H. H. Arnold, Commanding General of the AAF. This battleship of the air is armed heavily with multiple-gun power turrets and is as far ahead of the B-17 and B-24 aircraft as those two were ahead of pre-war bombers, it was explained.

The big bomber was developed by the Boeing Aircraft Company in close cooperation with the AAF and the Materiel Command. Engineering and production information has been turned over to other major aircraft manufacturers who will produce the plane through final assembly, and to other industrial concerns which will handle sub-assembly and parts production. The B-29 will be powered with Wright engines and use Hamilton-Standard propellers.

Here's the All-American Bombardier Cadet John W. Guthrie, Jr., of Philadelphia, Pa., a member of the championship teams from the Big Spring (Texas) Bombardier School, who grabbed every trophy at the 8th All-American Bombing Olympics held recently at Deming, N. Mex. Competing against teams from seven other bombing colleges the Big Spring boys won the match for the second consecutive time. Guthrie's accuracy from 8,000 feet established a new record and won him the All-American title.

It was made clear in the General's statement that production of the B-17 and B-24 aircraft will not be affected by advent of the B-29 but will be steadily increased.

Opportunity Knocks Again

Men who have been eliminated from air crew training for physical qualifications will be encouraged to learn that War Department Circular No. 271 now gives the commanding general, AAF Training Command, authority to reinstate those men who after re-examination are considered to be physically qualified to perform flying duty. This includes those individuals mentioned in Paragraph 2a, AR 615-160, 5 November 1942, and in paragraphs 3a and 4a, AAF Regulation 50-12, 10 September 1943. Requests for authority for physical re-examination and reinstatement will be directed to the Commanding General, AAF Training Command, Fort Worth, Texas.

75s on B-25s

With the muzzle of a 75 mm cannon set off-center in their noses, some of our B-25s now carry the mightiest firing wallop our planes have ever borne through the sky. The War Department recently revealed that this combination had brought gratifying results against the Japs in New Guinea where it destroyed an enemy transport plane coming in for a landing. Later, five direct hits left a large Jap destroyer in a sinking condition. The cannon-packin' Mitchell has also been used against gun emplacements, landing barges and tanks. One hit will knock the tread from any tank and destroy a light tank. The weapon, similar to the famous French 75 of World War I, has been used in forays at sea and has proved valuable against targets which are more vulnerable to shells fired at the sides than to bombing.

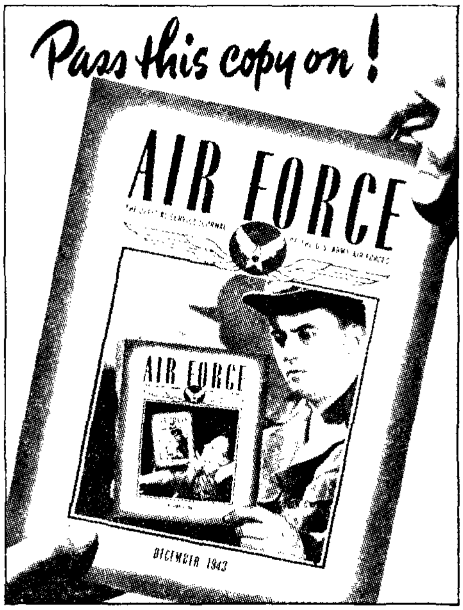
The additional firepower has been made possible through the development of a secret hydro-spring recoil device which makes the recoil practically negligible, and the extra armament does not affect the B-25's efficiency in bombing, strafing or torpedo missions. The 75 weighs at least three to four times as much as the 37 mm cannon in the P-39.

Covering Confusion

From two alert staff sergeants, Harry A. Mock and Robert W. Gold, Det. First Airways Communications Squadron, Oroville, Calif., we have received dark tidings concerning the back cover of December Air Force. The sergeants comment:

"There are three pictures on the back of the December issue of Air Force. The largest and the smallest are obviously the December issues. The middle picture showing the reclining soldier is also designated as the December issue, which it cannot be. The middle picture cannot exist. It cannot be a December issue as the pictures are different. It cannot be an issue prior to December as the reclining soldier is looking at a December issue. It cannot be a later issue as it has not yet been published. If it cannot exist it does not exist, and honestly we don't know why we are writing about it because logically we cannot even see it."

We were so impressed with the argument of the two staffs that we submitted their problem directly to Tech. Sgt. Roger Coster, Air Force photographer, who made the pictures. Under Coster's explanation we were soon floundering about in technical photographics far beyond our box-Brownie understanding. Doubtless there is some perfect explanation, we don't know. Personally, we're rather intrigued with the idea of allowing it to remain the mystery of the reclining soldier who didn't know what month it was. One thing does exist, sergeants, and we hope this point was free of confusion: After you have read Air Force, hand it to another reader. *"PASS IT ON"* is a clear reality. That we know to be a fact.



Highest Award

The Medal of Honor has been awarded to Maj. John L. Jerstad, missing since his plane dropped its bombs on the Ploesti oil refineries and then crashed into the target area.

The 25-year-old major was born in Racine, Wis., and educated at Northwestern University. The story of his valor is told in the War Department citation as follows:

"For conspicuous gallantry and intrepidity above and beyond the call of duty. On August 1, 1943, he served as pilot of the lead aircraft in his group in a daring low level attack against enemy oil refineries and installations at Ploesti, Rumania. Although he had completed more than his share of missions and was no longer connected with this group, so high was his conception of duty that he volunteered to lead the formation in the correct belief that his participation would contribute materially to success in this attack. He led the formation into attack with full realization of the extreme hazards involved and despite withering fire from heavy and light anti-aircraft guns. Three miles from the target his plane was hit, badly damaged and set on fire. Ignoring the fact he was flying over a field suitable for a forced landing he kept on the course. After the bombs of his airplane were released on the target, the fire in his ship became so intense as to make further progress impossible and he crashed into the target area. By his voluntary acceptance of a mission he knew was extremely hazardous, and his assumption of an intrepid course of action at the risk of life over and above the call of duty, Major Jerstad set an example of heroism which will be an inspiration to the Armed Forces of the United States."

FROSTBITE

At a recent conference on frostbite, held at the National Research Council, it was pointed out that the best available evidence indicated that lanolin not only fails to reduce the likelihood of frostbite, but actually tends to facilitate its occurrence. Previously it was thought by some authorities that lanolin could be used to help prevent frostbite and this view was expressed in an article from the Air Surgeon's Office printed in November AIR FORCE. That office hopes wide attention will be given this more recent development.

CHILEAN GUESTS

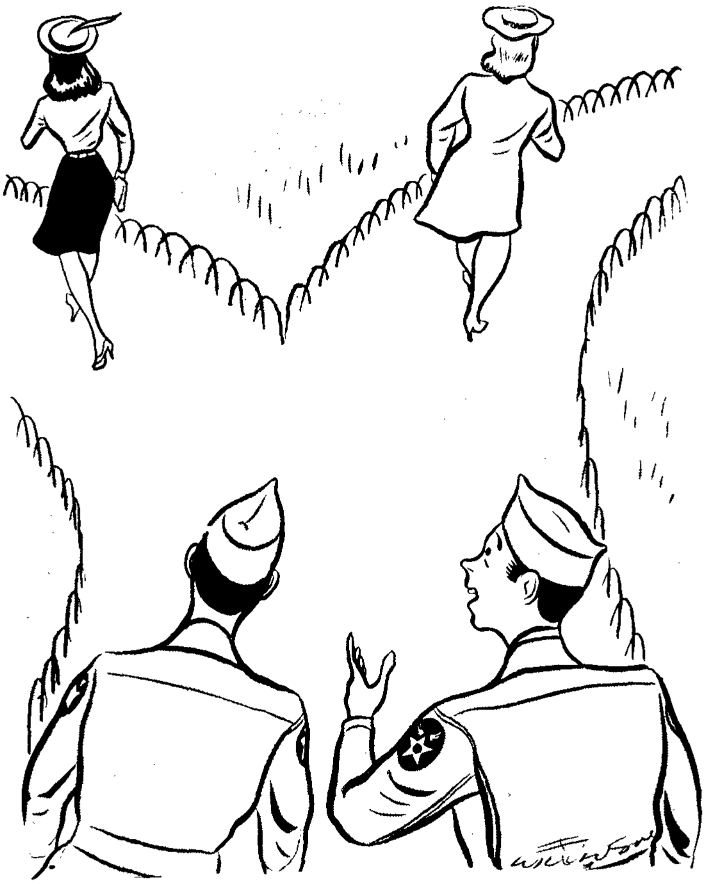
A group of top-flight officers of the Chilean Air Force including its Commander in Chief, Lieut. Gen. Manuel Tovarias Arrovo, has completed a tour of the United States to study the AAF in the field and the American aviation industry.

As guests of the War Department and the AAF, General Tovarias and his staff have made a thorough inspection of the AAF installations and of the factories where our equipment is produced. The visitors on their tour passed through 26 states, the District of Columbia and into Canada and Mexico.

Chile has one of the world's pioneer military aviation establishments, dating from 1913, and it is the desire of Chile to build up an air force capable of both defending her own homeland and becoming part of the air armor surrounding the western hemisphere.

The training of pilots and combat crews is progressing smoothly in Chile, the visitors reported, and the training of ground and maintenance crews is being undertaken. In Chile the PT-19 and AT-6 aircraft are doing the greater part of training work. A five-year expansion program has been set up by the Chilean Air Force and will be carried into effect as rapidly as equipment can be obtained by purchase or lend-lease from the United States. Chile has one aircraft factory set up for production of light planes, but this has been converted into a maintenance depot.

General Tovarias was accompanied by his Chief of Staff, Maj. Gen. Oscar Herreros Walker; the chief of the Air Force Materiel Section, Col. Edison Diaz Salvo; and the Air Force executive officer, Maj. Javier Undurrage Vergara. Col. Raul Gonzalez Nolle, chief of the Chilean Air Mission to the United States, joined the group in New York for the remainder of the tour. Col. Omer O. Niergarth, for three years chief of the United States Air Mission to Chile, made the trip from Santiago with the party and was in charge of the swing around the United States.



"I'll take the one at eleven o'clock and you take the one at two o'clock!"

—FRITZ WILKINSON

WAYWARD BICYCLE

Having a few hours leave, a young officer of an AAF station in England went into a neighboring town and had himself a pretty good time—so good that he ran into a couple of trees while cycling back to the barracks. He showed up at mess the next morning with several significant scratches on his face and immediately was under fire of squadron wisecrackers. The young man had a ready reply, however. "I was perfectly sober," he explained. "The trouble was, my bicycle got awfully drunk."

OVERSEAS STAFF

Our staff officers now covering the major theatres of operations are Maj. Charles D. Frazer who formerly was in charge of our offices at Headquarters, now in England; Capt. Robert V. Guelich, formerly our Wright Field representative, now in India, and feature writers Capt. George Bradshaw in the Mediterranean area, and Lieut. Larry Bachmann in the South Pacific. Major Frazer's "Beach Party," an article on rehearsal for the invasion of Europe, appears on Page 9 of this issue.

Our first report from this foursome came from Captain Guelich who was aboard a C-54 which crashed in the British Guiana jungle just thirty minutes before completing a 2,000-mile non-stop flight from Miami.

This crash was skillfully handled and none of the 22 persons aboard was injured. The landing was made on but one engine, the other three cutting out within fifteen minutes before the crash. Seventy-two hours after the jungle landing all personnel, baggage, freight and mail were on their way to the original destination and a salvage crew had begun to reclaim the aircraft.

Captain Guelich writes that he was impressed with the value of carrying life rafts even though a forced landing may not occur in water. He reports that rafts provided the only dry spots outside of their plane and afforded a place for the removal of baggage from the bottom hold which was partially filled with water.

RETURN OF A NAVIGATOR

Lieut. Converse Murdoch, a B-25 navigator, returned recently from Africa for a well-earned rest in New Jersey. He had just relaxed in the quiet meditative atmosphere of Newark when his telephone rang. "Tell me all about your experiences in Africa, lieutenant," a cub reporter demanded. "How many of those Japanese planes did you shoot down?" The navigator gulped once and braced himself against the wall. "Shot down every Jap I saw," he answered truthfully. The lieutenant, among his other experiences, crashed into a certain canal while on a torpedo-bomb practice mission. His official report of the incident took this turn: "Sighted Suez. Sank in same."

Death of a Friend

Miss A. R. Talbott, known by thousands of AAF officers and men as the custodian of the historical picture files at Headquarters, died several weeks ago after serving the Army Air Forces for more than twenty years. When she first came to the War Department, Miss Talbott was employed in the Information Division of the Air Corps. She later devoted her interests exclusively to the picture files, where she followed the photographic record of the growth of the Air Forces and their personalities through the most important years in AAF history.

Tail Mail

It takes some time to become accustomed to distance in Africa. Somehow you get the idea that when you have a few days leave in Tunis you can hop over to Cairo for the weekend. Then it dawns on you that the distance is about the same as from New York to San Francisco. If you have a friend in Casa, and you are in Constantine—well, you just don't pal around much anymore. Of course, you can write and the APO does a good job, but never good enough to suit the GI. For that reason at least one group of AAF boys have solved their communications problem. They are the ground crews who service the ATC and MATS planes. If you have a chance, examine the tail of any of these transports and see the long messages written to friends up and down the theatre. Everything is written there—shop talk, news of promotions, comments on the local love life, quotations from letters from home, talk about food and arrangements for getting together on leaves.

Best thing about this system is that there is no censor with scissors to come around and snip off the tail assembly.

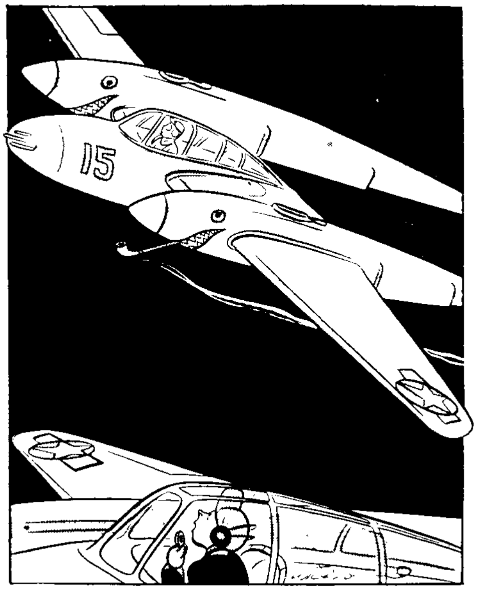
Snakes

Pfc. William C. McClish has written to us from the South Pacific to ask our opinion on snakes and we are elated. It is a human trait, particularly ours, to swell with pride when our opinions are sought. McClish had just read our July issue when he wrote and wished to take polite exception to one stanza in the article we titled, "Exploding the Jungle Myth." He quoted back to us this statement: "Pythons may be seen but they do not attack humans; no snake of the constrictor variety in the South Pacific islands is big enough to harm a man."

After briefing us in this manner, McClish came out with the information that some of the fellows in his outfit had just killed a boa constrictor which measured 22½ feet in length. "We saw this snake and it is our opinion that it was quite capable of harming us," he wrote. "What is your opinion?"

With a quick shudder we checked back with the Arctic, Desert and Tropic Information Center which prepared this article in question. They agreed that there are pythons 22½ feet long (as you well know, McClish), but the tropic expert insisted that the intentions of this snake, big or little, are entirely honorable, in fact, friendly.

Personally, we are willing to accept this fact, but we hope we never encounter a snake like yours, McClish. He might not hurt us, but he'd damned sure make us hurt ourself!



"Number 15, your port engine is smoking!"
—Fritz Wilkinson

Choice

A recent aerial gunner graduate at the Harlingen (Tex.) Flexible Gunnery School has expressed a preference for action against Zeros in the South Pacific. The 22-year-old gunner seems peculiarly well-named for his career. He is Jap Record Wilson, Jr., of Claude, Texas.

New Anti-aircraft Office

Maj. Gen. H. R. Oldfield has been appointed the Commanding General's Special Assistant for Anti-aircraft with the authority of an assistant chief of air staff. General Oldfield's job will be to act for and keep the Commanding General advised on all anti-aircraft matters affecting the AAF. He will exercise staff supervision over AA doctrine, tactics, technique, personnel, materiel and training for the Army Air Forces. He has taken over the duties of the old anti-aircraft section which formerly operated under the Assistant Chief of Air Staff, Operations, Commitments and Requirements. The general was formerly commanding general of AGF's anti-aircraft training center at Camp Haan, Calif.

Competition on Crutches

Our correspondent in England has sent us a report of a hospital there to which many AAF men are sent when they are sick or injured. It is the custom at this hospital, he said, for the nurses to line up in the yard each day and go through a regular Army drilling under a snappy first sergeant. Some of the patients, both officers and men, watched this exhibition with some interest and promptly began kidding the nurses about their military precision. The nurses, in turn, made some disparaging remarks about the patients. There were quite a few men in the hospital who were not badly injured and were hobbling around on crutches in their recovery from frozen feet and similar troubles. These worthies decided they were in condition to show the nurses some really smart drilling. So now, each day, there are three or four squads of hospital patients out in the yard, marching and drilling alongside the nurses, their crutches and walking sticks flailing in every direction. Our observer says that "To the rear . . . March" is really something to behold.

AAF-YAF

The first Yugoslav combat unit of the AAF was activated recently when four Liberators were delivered to the American-trained Yugoslav air crews. The four B-24s, assigned to the Strategical Air Force of the Northwest African Air Force, will operate as a unit. They bear both the insignias of the AAF and the Yugoslav Air Forces.

Homecoming

Rain was coming down in long crystal spears and the streets at this east coast air base seemed to be frying with water. On the porch of the PX stood a major, a captain, a corporal and three privates, all waiting for the doors to open at two o'clock, for the removal of that eternal notice: *Taking Inventory*. As the rain increased the crowd grew, oil slickers rustled and dripped, jagged brown splotches spread across the shoulders of belted gabardine. Soaked ankles in strap oxfords longed for GI shoes. It wasn't a lovely day.

Out of the cold pelting rain came an AAF navigator lugging a heavy handbag and a paper-wrapped bundle. He was wearing a handsome flight suit and on his breast were wings and many ribbons—even the clusters had clusters—and moisture had formed like frost on his silver bars. He asked about the bus schedule in a midwestern drawl, a low voice out of the dry earth and short-grass country. When told that the next bus was due in ten minutes he brushed the rain from his face and began grappling in his bag for a raincoat. It was obvious that he wasn't happy about the way a long-awaited leave was beginning.

"I hoped I wouldn't see any rain for a month," he grumbled. "I reckon that's why they named this New England." As he straightened up a rill of water trickled across his bright shoulder patch of the 8th Air Force.

Perhaps a Mask Was Used

Capt. Meredith H. Slade has blown us over with his story of an "interesting impossibility." The captain and fourteen others were taking a high altitude qualification test recently at the Santa Ana Air Base in California. "We had spent more than an hour in the chamber at an indicated altitude of 38,000 feet," he explained. "On three different occasions we had to 'descend' to a lower altitude to relieve one or more persons who were suffering from the bends or anoxia.

"Just a few minutes before completing the time limit on the test, an ordinary housefly, until then unnoticed, crawled out from under one of the chairs in the chamber and immediately became airborne. It proceeded to fly around in the chamber for a matter of minutes before landing on the ceiling. All this was performed at an indicated altitude of 38,000 feet."

Roll Call

In our mail pouch from the hot jungles of central Africa we found a dispatch which told of the extra duties performed by a flight surgeon. All the natives who work in the local PX must be examined for contagious and infectious diseases. After that requirement had been carried out somebody made a rule that the names of PX clerks must be posted. That, too, became the flight surgeon's job. Here is the current list of hired help:

Mandow N'daye
Sangbieneta Gamba
Hrahima Cisse
Olassane Nangavea
Abdanbaye Diang

OK, Sangbieneta, two Luckies, a set of tech chevrons and a Brillo.

Hans Across the Sea

Conscientious efforts made by the British—to rescue their own and American airmen, despite all hardships and hazards, was brightly highlighted during the invasion of Sicily. Receiving word that a flyer was down in the Tyrrhenian Sea, just off Sicily and north of the Messina Strait, a British amphibian underwent a tumult of German anti-aircraft fire from shore batteries while searching in the dark for the airman and his dinghy. Finally the amphibian crew spotted the rubber boat and descended under heavy fire

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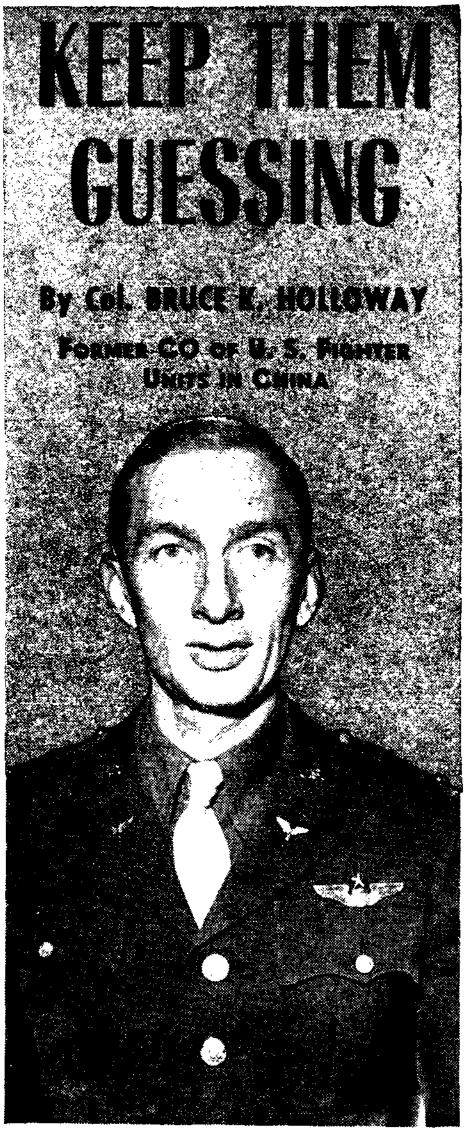
OUT OF THIS WORLD—More than 16,000 feet above the North Sea, these B-17s are caught in the rays of the sub-stratosphere sun. The weird cloud terrain highlighted beneath the bombers appears like the surface of another planet. Picture was taken by an 8th Air Force photographer on a practice bombing mission.

KEEP THEM GUESSING

By Col. BRUCE K. HOLLOWAY

Former CO of U. S. Fighter Units in China



THE AUTHOR

Colonel Holloway, who commanded General Chennault's fighter units in China during most of 1943, has thirteen confirmed victories over the Japs and has flown American fighter planes, mostly P-40s, on 110 combat missions. A West Point graduate, Colonel Holloway was first commissioned in the Cavalry but within a few months after his graduation, he was accepted for flying training. He was transferred to the Air Corps on completion of his training at Randolph and Kelly Fields. Colonel Holloway is 31 years old and a native of Knoxville, Tenn.

It is my purpose here to describe the guerrilla air tactics which conditions have forced us to employ in the China theatre. To be sure, we never wanted to fight that kind of a war. But to do the best we could with what we had—and it was little enough, heaven knows—we were compelled to hit and run, here today, there tomorrow, somewhere else the next day.

Before I left China in November, the situation had improved considerably. We were receiving airplanes, guns, ammunition and gasoline in increasing quantities. There will come a day—and the Japs know it, too—when we will have enough of everything it takes to turn loose a real air offensive in China. Then we won't have to hit and run.

Three important considerations dictated the adoption of guerrilla tactics:

(1) Our location with relation to that of the Japs.

(2) Our shortage of everything except targets.

(3) The nature of the enemy himself.

Our interior China locations were at the hub of a half-wheel, with Jap bases around the rim. One of our outfits was able to draw the Jap's air power to the west while another struck to the north. We could make him concentrate his air defense wherever we chose. We kept him guessing. And fortunately for us, he often guessed wrong.

At times the Japs had us outnumbered five to one, and usually as much as three to one. But last summer we sank 90,000 tons of enemy shipping, shot down about 175 enemy airplanes and did extensive damage to installations of various kinds. Our losses during the same period were about twenty P-40's and ten bombers. That is the answer to whether our hit-and-run strategy was right.

As I look back on some of those periods, it's a wonder to me that our airplanes and men were able to keep going. Last July, the Japs raided us every day for two weeks, and they took a terrific licking. Then we went on the offensive. The weather was perfect, and we had to make the most of it. We strafed and bombed shipping, dock areas and trains. We jumped all over the place, sometimes flying five missions in one day. That stretch of good weather kept up for two months. If the weather hadn't grounded us then, exhaustion soon would have.

We didn't have the time to patch the holes in our airplanes. Every plane that would fly was in the air. If a fellow's airplane was grounded, so was he; there weren't any spares.

How we ached for enough equipment and men to begin the kill. We used to talk a lot about what we could do if we had this or that. "Praise the Lord and pass the P-51s" was a plaintive saying that caught on in our outfits. We all knew that nobody was to blame, that it was just one of those things, and that some day there would be enough of everything to go around. Until then, as someone put it, we'd have to keep "doing the mostest with the leastest."

During that summer offensive of ours, the ground crews were working day and night. We had an average of about one crew chief per plane and one armorer for every two planes. Usually they had to work in the open. One of my squadrons had no transportation of any sort, not even an armament truck. They had to load bombs by hand because they had no bomb hoist.

Nor were the ground officers any better equipped. In this same squadron they had to make out reports by longhand until I gave them my typewriter.

The U. S. ground personnel in China, both officers and enlisted men, deserve great credit. They work under the most difficult conditions, but their morale is good. This Army of ours has never seen a more loyal crowd. For flying personnel, combat missions provide an outlet. There is no outlet for ground men.

The greatest comfort we had was the obvious superiority of our equipment and men. We used to figure that when the ratio of planes was only two to one we had him outnumbered. There is at least that much difference between us and the Jap in the quality of airplanes and the skill of the pilots.

The Japs knew that too. They learned to respect our P-38s and our P-40s.

The Jap is courageous. He has to be, or he wouldn't fly that cheesebox Zero of his in combat against P-40s.

Now an appraisal of the Jap, including some of the things about him that led us to guerrilla tactics:

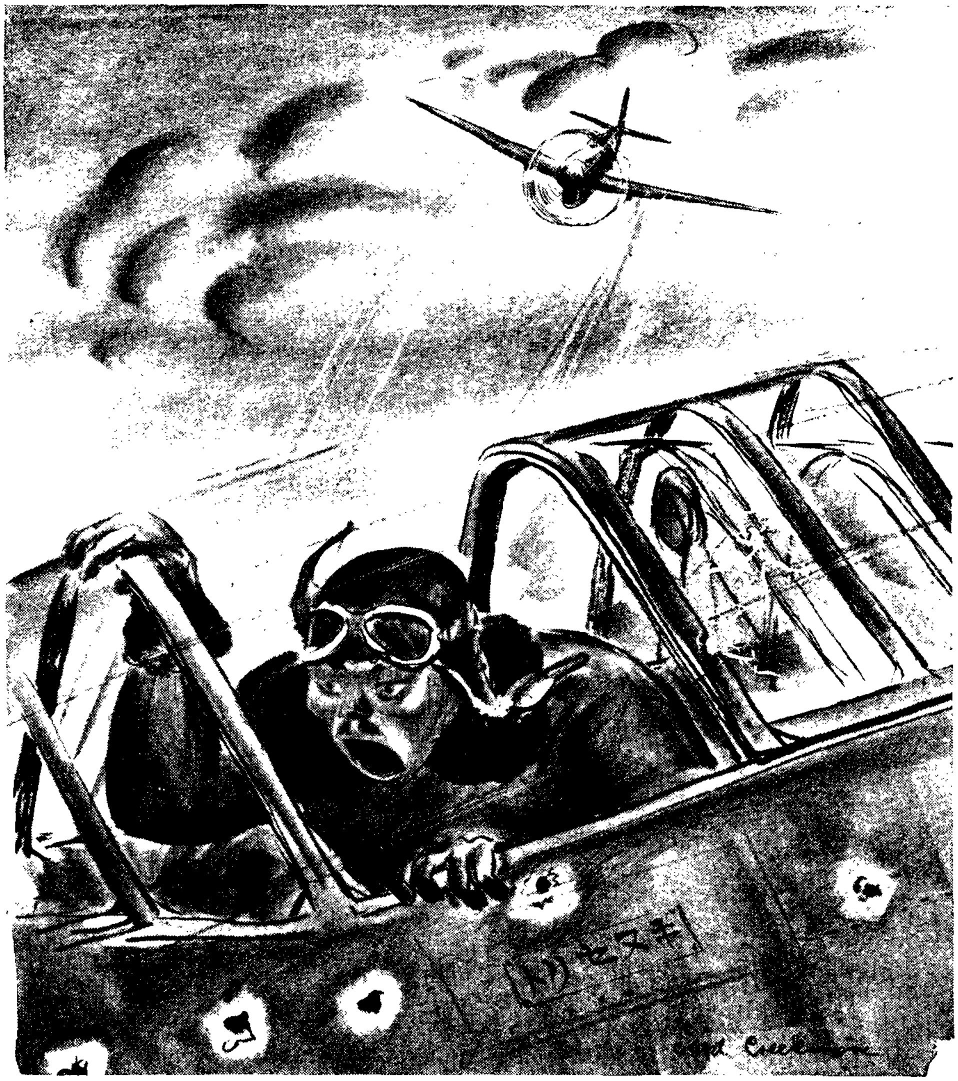
The Jap is probably the best disciplined soldier in the world. In fact, he is so bound by the rules of discipline that as an individual he is lost. He knows nothing except to obey. As long as his plan is in order, as long as he can follow the instructions given to him by his superiors, he is a good soldier. But knock out his plan, put him on his own for survival, and you've got him.

That's why I stress this element of surprise in the guerrilla air warfare in the China theatre. He has no initiative and no resourcefulness when circumstances make him his own boss. He fights by the book.

We have made capital of that Jap weakness many times. They used to attack our bases—doing a fair job of it, by the way—and then head for home. They would look neither to right nor to left. The book said to attack, get the job done and return to base. That was what they did, and it never seemed to occur to them that they might run into trouble before they got home.

After one of these raids, we went out to look for homing Japs. We saw two Zeros far below us. They were cruising along as if they were out for a Sunday joy ride. There were six of us. It was one of those happy situations we used to dream about. We dived, got on their tails and let them have it. Honestly, I believe they never knew what hit them.

Two of us, flying P-40s caught a Jap bomber which had been flown away from



"Then, obviously in a panic, he turned directly into my guns."

Illustrated by Capt. RAYMOND CREEKMORE.

a base we were raiding. If he had bothered to turn his head, he would have seen us. But he obliged by keeping his eyes straight to the front. We turned around and got behind him. He made a perfect target. We got him.

What this adds up to is something very important. We Americans, in addition to the great advantage of superior equipment and superior training, are more than just parts of a war machine. We know how to use our heads. We are individuals. We can think for ourselves. The Jap is a book-fighter, and he always will be. We can and must make the best of that advantage.

The Jap goes to pieces when he is scared. Two of us cornered a Zero in the mountains. He turned left and my buddy headed him off. Then, obviously in a panic, he turned directly into my guns. I shot him down.

Once when we started to raid some dock installations and a factory on the Yangtze, we ran into very heavy anti-aircraft fire. We used a system that I call the rodeo. P-40s milled around like mosquitoes firing bullets all over the place. They were running at about 3,000 rpm. With all the noise and with bullets flying in all directions, the Japs got confused. Then P-38s came in and dive-bombed. They knocked out the factory, and not one of our planes was hit.

Frankly, I don't know how good the Jap is as a gunner. I never let one get close enough to me to find out. The effective range of his guns is extremely low, and unless he has you greatly outnumbered or catches you off guard, you can outshoot him. It is a fact that the effective range of his 20 mm is less than that of our caliber .50 machine gun.

The speed and climb of the Zero will fool you if you aren't careful. I learned the principles of leading the target when I used to shoot ducks in Tennessee. There's nothing greatly different about leading Zeros. But unless I keep on the alert, I am likely to underestimate his speed. I have settled on this rule: lead by the distance that seems right, multiply by two and shoot. It has proved to be a good rule.

The Jap will try to get on your tail. You'll have to watch. Plane for plane and gun for gun, he is no match for you, and he knows it. His only chance is to outmaneuver you.

The way he fights will puzzle you at first. When you dive on him, he will pull up into you, and you will think that in spite of all you can do he is going to ram you. To hit him from that position, your nose must be pointed ahead of him. That means that you can't see him when you shoot. I got one that way. He was behind my line of vision. I shot, pushed forward hard on the stick, and barely avoided ramming him. He went down. I think it was the worst scare I ever had.

THERE are four rules of my own that I would like to pass on to other fighter pilots:

(1) Look everywhere, especially to the rear.

(2) Always stay in formation. They will gang up on a straggler.

(3) In strafing, don't overstay your element of surprise. Hit hard and get out.

(4) After strafing, make your withdrawal low, erratic and at high speed.

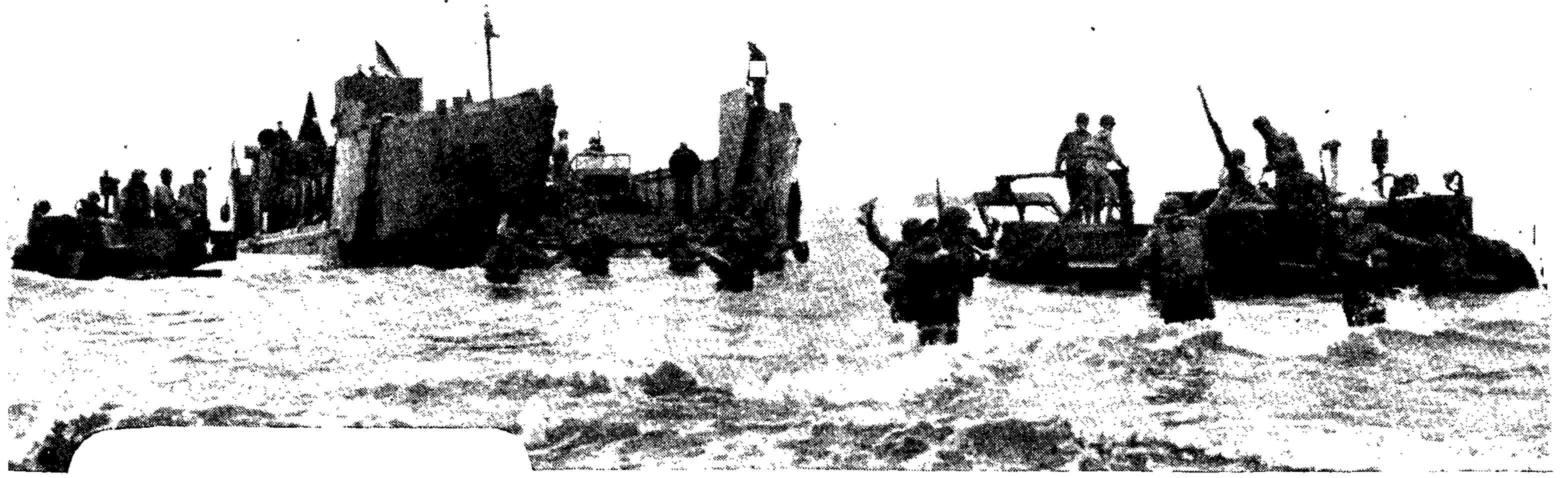
As General Arnold has said, this is a smart man's war. You must outthink your enemy. That means keeping cool. You watch for your opening, then let him have it. A boxer punches. A man blind with rage swings and leaves himself wide open.

You'll be scared in combat, and don't let anybody tell you otherwise. You should be scared. It makes you cautious. It keeps you alert. It makes you a boxer, not a swinger.

A fighter pilot should never forget that he is part of a team. Every member of his formation is dependent upon every other member. I knew a fellow who had a way of streaking off alone, and he finally was shot down.

There is romance in the life of a fighter pilot, of course, and to be success-

(Continued on Page 64)



In this practice invasion, one section of a wave of LCVP boats has hit the sand of a British beach. Two tanks and a bulldozer have been driven into the water and assault troops are scrambling through the icy water toward a beach-head.

BEACH PARTY

'To overcome the heavily fortified beaches of Europe is to launch an assault unequalled and unparalleled in all history, and that's what we're training for.'

By Maj. Charles D. Frazer

AIR FORCE STAFF CORRESPONDENT

Somewhere on a remote and rugged stretch of English coast thousands of American troops are getting ready for an important occasion—those first wild minutes in which they will land on the heavily fortified shores of enemy-held Europe, overcome beach defenses and launch their drive inland.

When that day comes Army airmen will have thoroughly prepared the way.

Bombers will have pounded enemy airfields, installations and communication lines. Photo reconnaissance units will have acquired a mass of intelligence data. Other air operations will have contributed to final success.

But there remains the invasion itself. This is to be the greatest, perhaps the most difficult assault in military history. Army bombers and fighters, along with Navy warships, must prepare for and support the actual landing.

So this is a story of our assault troops, of what they do at the U. S. Assault Training Center in Britain and how they will attack.

Final battle indoctrination of these troops is divided into two main phases: a beach landing and a frontal attack against an inland strong point, or "hedgehog."

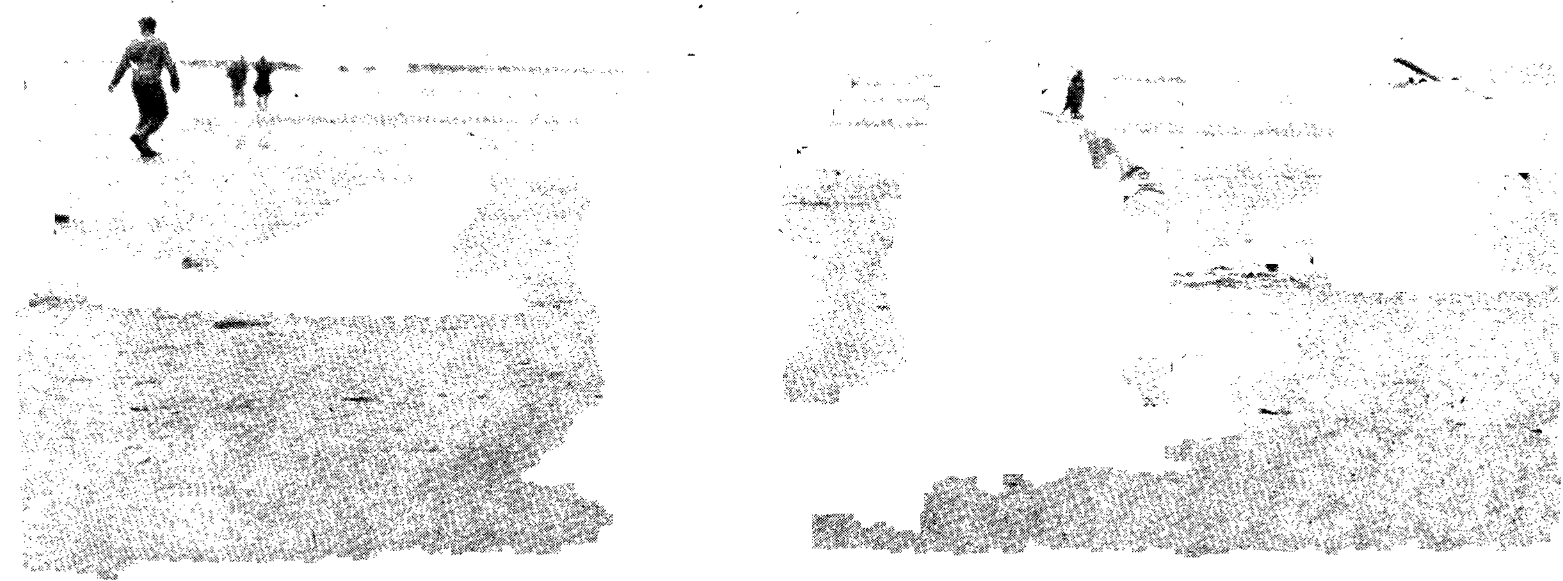
Prior to these exercises infantrymen who are already tough and well-disciplined have undergone severe conditioning in this specific work. They have spent weeks tumbling down thirty-foot ship sides on practice debarkations, climbing over high concrete invasion walls, learning all there is to know about demolitions, mines, booby traps and grenades, clearing barbed wire with bangalore torpedoes, and familiarizing themselves with every weapon and piece of equipment they will use.

At last come the active invasion rehearsals.

First, the beach landing. The scene is a faithful reproduction of the fortified areas built by the enemy. Several hundred yards of beach criss-crossed with barbed wire and studded with tank traps, booby traps and mined areas.

Behind the beach rise low, irregular sand dunes and back of them is a steep hill covered with a tangle of underbrush. The few "exits" for vehicles are guarded by road blocks and ditches and covering fire. From end to end, the area bristles with pill-boxes, machine gun nests, coastal *(Continued on next page)*

These troops have left their landing barge and waded hip-deep in the surf to reach the sandy beach and the two men in the foreground are ready to go into action with their mortar while others are pressing forward under fire.



n locations and other "enemy" defenses.

It is dawn of a late October day. Cold, gray, damp, muddy. Out to sea you can just distinguish a long line of low craft chugging toward shore, rolling white foam before them. This is the first wave of assault troops.

Prior to a real landing, naval bombardment would have got in its long-range work. Such bombardment accomplishes four things: It creates craters on the beach and in the hills to provide cover for landing forces, breaks up wire defenses, fields of enemy fire and obstacles, helps to destroy camouflage, and helps to destroy the enemy himself.

Aerial bombardment and strafing come into play for the same four purposes. Also, when landing is imminent, smoke bombs are dropped to obscure the enemy's vision and provide added cover for our attacking troops.

Through the smoke and half-light of this realistic maneuver the assault begins. Wave upon wave of Navy-operated landing craft can now be seen heading in shore. There are LCVPs, LCMs and the larger LCTs. There are the famous DUKWs, or "ducks"—two and a half ton amphibious trucks which are one of America's notable war developments.

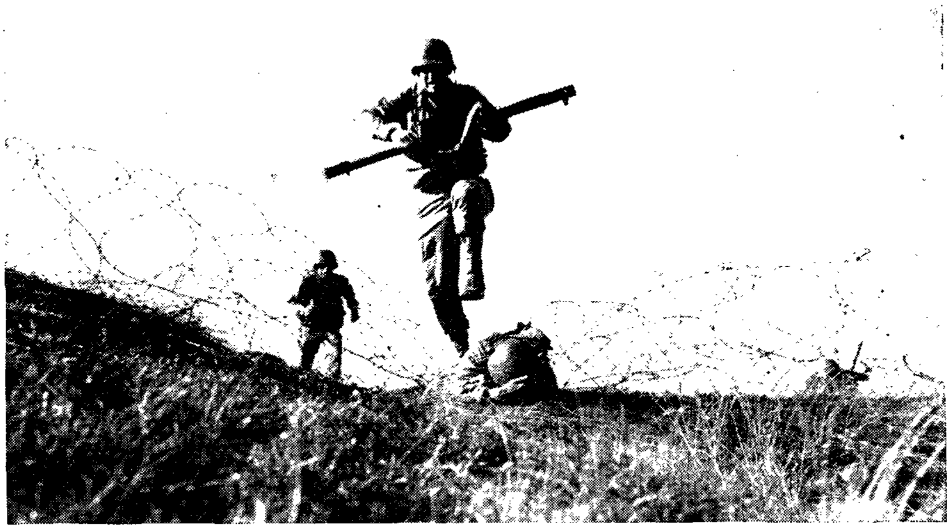
As the craft swing through the surf, coming to rest in the shallows, our assault troops spill out. Holding weapons high, they leap belt-deep in water, push quickly ashore and take cover where they can.

The beach is soon an anvil chorus of action. The fire is all live, of course. Infantrymen swarm toward their objectives against exploding charges of TNT planted in the sand to simulate enemy artillery fire and aerial attack. (Our own aircraft would by this time have moved their point of attack farther inland.)

CLEARING wire entanglements is one of the early problems. Under covering fire, men wiggle forward to cut some of them. Heavier forests of wire are breached with the shattering blasts of bangalore torpedoes. If there are only one or two strands they may be overcome by body-bridge, that is, by one man flinging himself across the wire while other troops use him as a bridge.

A variety of fire is being directed against enemy positions—rifles, carbines, grenade-throwing rifles, the powerful bazookas, Browning automatic rifles, light and heavy machine guns, mortars, hand grenades and other weapons. Smoke shells are thrown continuously.

After the beach-head is established, landing craft keep piling onto the beach and support is given these attackers by fire from M4 tanks, M10 tank destroyers and artillery. Trucks and bulldozers also arrive, as well as personnel reinforcements, shore patrols to control traffic, engineers, medical men and so on.



While his comrade forms a "body-bridge" to press down the barbed wire, this soldier moves across "enemy" defended terrain as the attackers gain ground in the training maneuvers staged at the U. S. Assault Training Center.

This entire operation is masterfully coordinated. Against the "enemy's" combination of obstacle and fire, our troops oppose a combination of cover, fire and movement. After breaching wire and other obstacles, and knocking out gun positions among the dunes, the first wave of assault troops presses quickly up the steep hill, squirming, crawling, hacking through the brush. They drive inland as rapidly as possible while mopping up, and organization of the area takes place behind them.

This organization requires fast, strenuous work. Engineers must overcome anti-tank walls or ditches or road-blocks, must hurriedly tool cut roads for our own use. Artillery must be hustled into strategic positions against possible counter-attack. Stores of ammunition, gasoline, water and food must be landed. Telephone and radio communications must be set up.

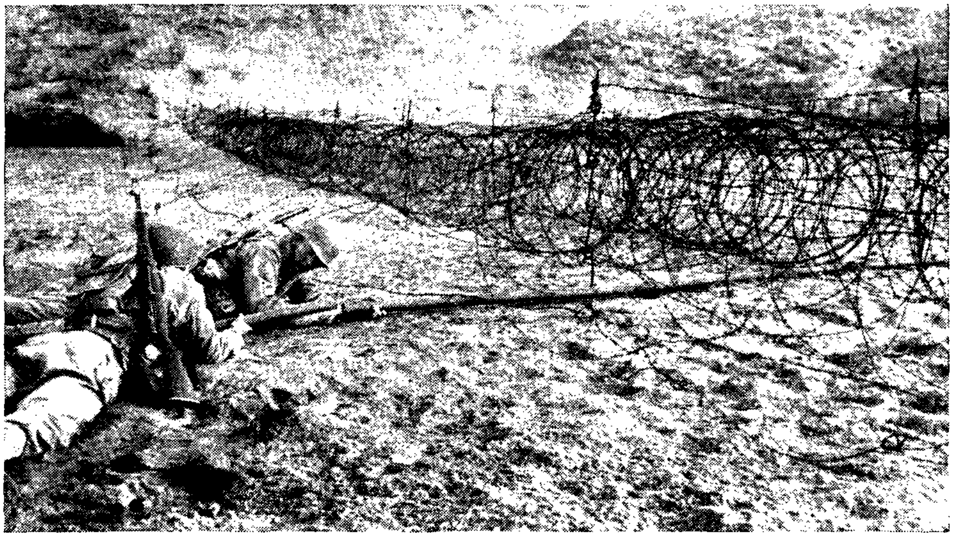
And severe air bombardment would be preceding the infantry landed on this beach. It would provide cover, help to detonate mine fields, interfere with any attempts to move up reinforcements.

This beach landing itself is really accomplished by many individual task forces. Every craft-full of troops is, in fact, a small task force, a balanced team of coordinated weapons.

That is the way it must be, for even in training maneuvers the beach is soon a melee. The heavy smoke and noise of battle swirls around you in such confusion that, in the early stages, communication and over-all command are clearly out of the question. Each unit must move independently against the combination of obstacles, mines and cross-firing pillboxes until primary objectives are destroyed.

Casualties are to be expected in maneuvers of this nature. This is an au-

Their faces blackened for camouflage effect, these assault troops creep low over a portion of the sandy, grass-stubbed beach-head toward their objective, a pillbox built like those of the enemy.



In this photograph a bangalore team has almost completed the laying of a length of pipe which will blast away the barbed wire entanglement. This method is used under conditions which make the "body-bridge" impractical.

thentic taste of war. But officers and men are all eager, tough, enthusiastic. In this preview of the invasion they will some day make, they organize the beach with astonishing speed and efficiency. You almost expect somebody to come along and set up a hot-dog stand.

The second phase of the maneuvers—attack upon a "hedgehog" defense—is quite another matter. It appears to be more orderly, though no less strenuous.

Modern fortified areas—called "hedgehog"—are characterized by concrete and steel pillboxes, steel turrets, open emplacements, troop shelters, slit-trenches and similar installations. Pillboxes form the heart of the defense system. They are camouflaged, rise only slightly above the ground, and are located so as to provide interlocking zones of fire and mutual fire support. In the pillboxes are weapons varying from machine guns to anti-tank guns up to light field artillery, and the ground in front of the embrasures is leveled to assure long fields of fire.

Throughout the whole area are anti-tank obstacles, ditches, traps, mine fields, bands of barbed wire and countless anti-personnel mines. Usually all trees and underbrush have been cut away so as to deny cover to attacking troops.

A replica of such a "hedgehog" defense has been constructed in acres of rough wasteland behind the beaches of the Assault Training Center. Here reinforced infantry battalions get their all-out rehearsal in the coordination of air, indirect, direct and high-angle fire weapons, together with the specialized assault technique they have learned.

They also receive excellent battle indoctrination, since the fire of supporting weapons is fired over their heads. All weapons fire service charges. No blank ammunition or simulated effects are used.

For purposes of the exercise it is assumed, from a tactical standpoint, that some units of a regiment have landed on a hostile shore, overcome its beach defenses, pushed inland and by-passed a fortified area. Other units, having landed and been reinforced make a frontal assault and reduce the fortifications.

Air support plays an important part here. Preparation for the assault consists in a combination of aerial bombardment and artillery fire. Medium bombers drop high explosive bombs on enemy positions and crater the ground for advancing forces. Fighters strafe machine-gun nests and pillboxes, causing the enemy to "button up." Smoke is laid down through the area by both aircraft and 60 mm, 81 mm, and 4.2-inch mortars.

Moving forward with the crawling troops, you find that the attack is covered by the massed fire of all weapons.

Overhead shells scream and swish toward the fortifications in front of you while on all sides the thundering cracks of the tank destroyers mingle with the quick patter of machine guns, the more deliberate reports of MIs, and the general rumble of mortars, rocket launchers, self-propelled howitzers and other weapons. Signals men move along with wire and walkie-talkies to provide for communications and fire control.

Soon, as the infantry nears its objective, this assault becomes much like the beach landing in character, with the troops blasting through barbed wire and obstacles to demolish every fortification.

In both assaults the bulk of the weapons used are basic infantry. However, the manner in which they are used and synchronized, the type of coordination devised for planes, infantry, artillery and armored forces, is the true secret of this specialized training.

And it is extremely specialized training. Col. Paul Thompson, 37-year-old commanding officer of the center, author of "Modern Battle" and an acknowledged expert on German warfare, stresses the fact that his rigorous course is designed for a specific purpose, place and operation.

The book of doctrine used at the center incorporates all the knowledge obtained by Allied assaults in the Mediterranean and elsewhere, and includes much that is new. Everything about the training is rugged. But it is based on a realistic appraisal of the thoroughness with which the Germans have fortified Europe's coasts and of what must be done to invade them.

"There is no precedent for this attack," says Colonel Thompson. "Nothing to furnish us with data. No other place has posed such a problem. To overcome the heavily fortified beaches of Europe is to launch an assault unequalled and unparalleled in all history, and that's what we're training for."

It will be some party. ☆

Infantrymen, landed on the beach-head of the assault course, have set up the "brain" of the attack—the message center, through which clear orders for the attacking forces. Other equipment is in the background.

Major Newby leaves the JU-88 through the bathtub gunner's pit, the plane's entrance and exit.

ATLANTIC

How two AAF officers flew a 'gift' from Hitler across the ocean for inspection by Materiel Command engineers.

By Maj. WARNER E. NEWBY

IT ALL began at a Nazi airfield somewhere in Rumania near the Russian front, on a hot September morning of 1943 when a 28-year-old pilot decided he had suffered enough of the iron rule and the clicking heel. Reports had trickled back that Berlin was taking a terrific air pounding from Allied light and heavy bombers; parts of the city were rubble and debris and nearby industrial areas were still smoldering. The Russians were driving harder and nearer. Italy was a turmoil of Axis hate and defeat. And generally the Luftwaffe, wherever it flew, was being driven from the sky; fighting at every turn on the defensive, losing sometimes entire squadrons, suffering heavy losses, beaten in the air and on the ground.

So this young Nazi pilot decided to get away from it all before it was too late. He had early mess, went out to the flying line alone and picked out the newest airplane he could find. It happened to be a powerful JU-88, twin-engined high-altitude medium bomber equipped with a special camera installation for taking photographs five miles above the earth. A small card attached to the control wheel said the ship had flown less than fifty hours.

A few minutes later he was in the air, out of sight of the German airdrome and the nose of the ship was pointed toward Syria, to an airfield where other Nazi pilots had gone before him. For two hours or more he flew the ship and then the weather began to fog up. When he "cut through" there was nothing but a vast expanse of sea. He was lost and he couldn't turn back.

Finally, with the gas gauges running low, he spotted a small island and he prepared to land. He let down the flaps and the landing gear and eased up on the throttles. The ship began to settle.

This act of lowering the flaps saved him, for out of a cloud came a squadron of British Hurricanes, returning from sea patrol. They held their fire when they saw the Nazi warbird preparing to land on their own airdrome on the island of Cyprus. They flew alongside to make sure it wasn't a trick and three of them escorted the JU-88 so low their wheels nearly touched the ground.

The Nazi pilot made no effort to escape. He taxied the airplane to the flight line, cut off its engines, climbed calmly down from the cockpit and gave himself up—a prisoner of war.

But the "prize" he brought with him was of greater importance. Here was a model of one of Hitler's latest bombers. On its delivery plate was stamped the month of manufacture—June, 1943.

The prisoner gave the Allied Command much interesting and helpful data about the German airplane and about the Luftwaffe and the morale of the Nazi airmen. He practically taught them how to fly the JU-88 and was careful to point out its faults and peculiarities to a British wing commander who officially became test pilot for the enemy aircraft.

Later the wing commander flew the ship from Cyprus to an airfield near Cairo, Egypt, and it was here that Lieut. Charles E. Thompson and Maj. Morgan Nelson of Crash Intelligence made diplomatic arrangements to have the plane assigned to the AAF for evaluation study.

That is how we came into possession of the JU-88 which today rests in a guarded hangar at Wright Field—many thousands of miles from its original home field—and in completely flyable condition. It is now undergoing one of the most rigid and extensive test routines that the Materiel Command Laboratory experts and crack test pilots can give it. What happened in between is one of the most unusual stories of the air war.

THIS is our story:

Since July of 1942 Lieut. G. W. Cook and I had been in the African theatre, flying bombardment missions in a B-25 during the air drive to keep Rommel from the gates of Cairo. We had our share of the bombings and the hell that goes with them. And now, with orders in our pockets, we arrived in Cairo ready to board a transport plane for the States and home for a leave. We never got inside the cargo plane.

At the field we saw it for the first time. The British had put on a new paint job, splotches of blue and grey, and orange here and there, but it still gave the appearance of German construction—rough-and-ready, a fighting man's airplane, nothing fancy, but all warplane.

When we heard its strange story we dubbed it "Baksheesh."

In Egyptian that's "Something for nothing."

We called it a gift from der Fuehrer.

Although the boys were betting two to one that it couldn't be done, Lieutenant Cook and I accepted the assignment to fly

CROSSIN' IN A Ju88

the Nazi bomber across the Atlantic and deliver it to Wright Field. We agreed only after we had taken one flight in the ship with the RAF wing commander, and we both concluded that the airplane, with some changes, could make the hop.

The first flight revealed an interesting characteristic about the plane. Its two three-bladed, controllable pitch, constant speed, full feathering, hydraulic propellers both rotated to the left and, consequently, because of the over-torque the plane had a tendency to turn in that direction. This no doubt was a fault in German construction, since we have found in our planes that opposite rotating props in multi-engined aircraft produce the best performance. The wing commander knew his stuff. Torque didn't bother him at all. He took off with ease and just "let 'er turn," which were his words of instruction. They were most helpful.

From then on the airplane was our baby.

Naturally everything in the plane was German: the readings on the instruments, instructions on the throttles, elevator controls, landing gear mechanisms, flaps, brakes, ignition. We had to familiarize ourselves with each before we took off on a hop to an American air depot field a few miles outside of the city where we began extensive preparations for the long over-water flight that lay just ahead.

There was very little information available on the craft itself because it was so new. Some helpful data was derived from a handbook found in the plane and translated for us. Intelligence gave us some tips about fuel consumption, oil consumption and other information, but a great deal was lacking. And we had to find out for ourselves.

The first consideration was a complete overhaul. Our proposed flight was straining the airplane, anyway, and to play safe it was best that everything should be in tip-top shape. Six enlisted mechs from the depot group were selected because of their mechanical aptitudes and their ability to keep their mouths closed, for this was a project we didn't want too many people to know about. Working with them, as volunteer helpers, were a Consolidated Aircraft Corp. engineer and a General Electric technician. There was no lack of skill and enthusiasm. Everybody pitched in and we worked night and day for a week.

TROUBLE started early when mechanics tried to remove the spark plugs for cleaning. It took two and a half days for the job. The outside banks on the V-shaped, in-line inverted Jumo 211-J engines were easy to get at and the plugs were out in little more than three hours. But the inside banks presented difficulties, chief of which was the fact that you could feel them but you couldn't see them. Our mechanics designed their own special tools for getting out the plugs and they cleaned them and inserted them again. The engines smoked a little when they started, but they were pronounced ready. But even these short engine runs for tests were expensive. It used up most of the Nazi gasoline and oil and we weren't sure what kind to burn.

That was the second major problem that had to be whipped. Samples of the oil, coolants, gas and hydraulic fluids were turned over to American fuel analysts who informed us that the gasoline was around 87 octane; that the oil was very similar to our heavy stuff; that the coolant was fifty-fifty glycol and water, and that the hydraulic fluid had several constituents with a castor oil base. The closest we could come on the gasoline was our own 91 octane which we decided to use. The oil we were using in our bombers was OK, so were our coolant liquids. The standard U. S. hydraulic fluids worked satisfactorily. From the careful data kept on the previous flight from the RAF field to our depot (approximately 100 miles), we computed the average fuel consumption and estimated the utmost range of the aircraft to be 1,300 miles with its present tanks, which was insufficient for our planned longest over-water leg of the flight. More fuel capacity had to be arranged and after careful study of the ship, it was decided to hang external droppable gasoline tanks on the bomb racks which are close to the fuselage between the body of the plane and the engines. Two P-38 wing-attachable tanks were secured and our maintenance men set out to apply the bomb-shaped 300-gallon tanks to the Nazi shackles and releases—no easy task.

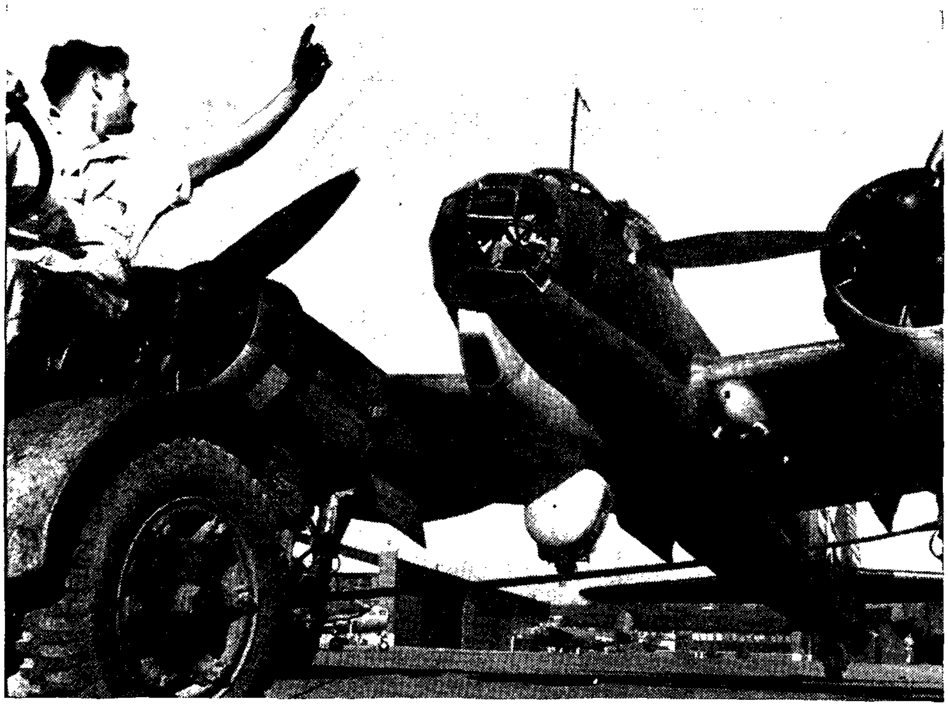
Many interesting facts were learned about the plane's offensive power when reports on the bomb installations and operating devices of the ship were studied.

By sacrificing range the Germans could sling two 1,000-pound bombs under the wings in these racks. Thus equipped, the ship was used as a high-altitude bomber.

For ground attack and strafing, the Nazis had a unique gun rack arrangement with six 303 caliber machine guns, angle of fire pointed downward, which could be slung under each bomb rack giving the airplane twelve rapid-fire machine guns for forward fire.

Once installed, the P-38 tanks presented another problem. The German system of fuel injection in transferring fuel from their "rack tanks" was unadaptable on our own. The next best thing was the fuel transfer system on our Consolidated B-24 one of which was removed and installed in the JU-88. The results were better than we had hoped for.

With this unusual fuel tank installation completed it was estimated that we had increased the range of the airplane so



The captured JU-88 is towed on the flight line at Wright Field after Major Newby and Lieutenant Cook had flown the German bomber across the Atlantic.

that it could fly non-stop for approximately 1,900 to 2,000 miles.

It was during one of the attempted installations that an incident occurred which put us on our guard, even made us dubious of the ship itself and its trustworthiness.

A WING tank was completely installed and we tried out the emergency release just in case it should ever be needed during the crossing. The Germans had it pretty well hidden, but we traced it down. Lieutenant Cook stood under the wing and held onto the tank to cushion its fall to the hangar floor. He gave me the signal to release the tank. I snapped a switch labeled *Bombenbefreiung* (bomb release) and what happened sounded like a Fourth of July celebration. There was a series of explosions and clouds of powder smoke.

When the smoke cleared away, I saw the left bomb rack, shackle and tank had been completely blown off. An inspection revealed that explosive-loaded fastening bolts and linkage rods had blasted the tank free. It was the Nazi way of dropping their fuel tanks—effective, but crude. And to say it didn't scare us would be lying. Lieutenant Cook even sustained minor wounds in the back from pieces of shrapnel. It took two more days o repair the damage and fashion some metric thread bolts to hold the tanks in place. And from then on we decided to use the manual release for the tanks.

The incident led to another thorough inspection of the aircraft to ascertain if it had any other "tricky" devices. One other gadget was found, a small button marked "Rudder Salvo" which we learned (fortunately not by actual experience) never to touch. It, too, had an explosive effect. Once pressed, it set off a series of planted explosives which completely disengaged and demolished the rudder and tail assembly from the airplane, rendering it unflyable. This, we were told, was one of the reasons why so many of the Nazi planes were found intact in the desert clean-up except that they were minus rudder, elevators and horizontal stabilizer. It was an ingenious means the Nazis had devised for making a captured airplane of no use to their enemy.

This closer examination also revealed that there were hardly any outstanding faults in the aircraft, other than a slightly cracked fire wall, some chafed coolant lines and a couple of blown gaskets on the exhausts. These were quickly repaired and remedied.

The ship still had its four guns, which had to be removed. Outfitted as a photo reconnaissance ship it did not carry the forward firing guns. There were two 303 caliber guns in the lower gondola, which resembles a bathtub, on the bottom of the fuselage directly below the pilot's compartment. In it the gunner lies prone on his belly and operates hand-held flexible guns firing to the rear and down. Another gun position is in the tip of the fuselage where two guns of the same caliber fire to the side and rearward while the gunner operates them from a standing position. The ship has no forward firepower when used as a photo airplane and depends entirely upon its speed for evasive action. All the guns in good condition were shipped by air cargo plane so we could gain every advantage in weight. There were also some excellent precision cameras taken from the bomber and shipped to America.

Although the plane normally carries a crew of four, when it was loaded with our necessities there was barely enough room in the cockpit for two people so the flight was planned without a navigator or radio operator. I spent many hours studying the German instruments and gadgets and felt certain that we could get the plane through all right, but to play safe an American radio compass was installed.

For security reasons we painted the AAF insignia on the lower and upper surfaces of the wings and the sides of the fuselage. In addition, large American flags were painted on the bottom of the fuselage, top and rudder and on the wings. We were taking no chances on getting shot down by an impetuous pilot out for glory. Messages and telephone conversations buzzed all along our route a week ahead of time informing all Allied fields to be on the alert for our plane, safeguarding our passage. It was a strange feeling, flying in a German plane with your own aircraft buzzing all around you.

The ship was almost ready to start its journey. Our next two days were spent in checking emergency equipment, and I frankly can say that on no airplane have I ever found so damned many automatic devices. You press one button and the escape hatch flops open; another and the lower half of the gun gondola falls off; push a third and the life raft pops out and automatically inflates.

The life raft is similar to ours but not as efficient. Its operation principle is about the same. During tests, however, we found that it became soft in less than twelve hours. Closer observation showed it was filled with tiny pin-point holes, indicating an inferior rubber had been used or that it had not been inspected for a long period of time. We installed one of our rafts in the hatch, which is just forward of the vertical stabilizer, and hooked it up so that it worked excellently, even with the German ejection system.

At this point, it was decided to equip the ship with new tires, and fortunately (although we don't know how and can't explain their being there) we found two tires on the depot salvage pile which were marked with a "Made in Germany" imprint. They were just the right size and fitted perfectly.

The ship was ready, serviced and checked.

On the morning of October 8, with the day clear and only a light breeze blowing in from the desert, we climbed into the cockpit and kicked over the right engine which leaped to life and purred like a noisy tomcat. But the left engine barked, turned over all right up to 1,000 rpm and then stopped dead.

We checked everything, strainers, gas

lines, valves and we removed the cowling, but the inspection showed everything to be in proper order. Then when the covering was removed from the automatic fuel control valve, it was discovered that one of our mechanics had put an oversized cotter pin in a clevis pin which caused the fuel valve to become jammed on a very slight movement. When the proper size pin was installed the engine roared and checked normal.

By this time it was high noon. I lowered the flaps to their normal 25 degrees position for take-off and pushed the throttle. The ship was carrying a full load of fuel, approximately 50,000 litres or 1,300 gallons, including auxiliary wing tanks. And we had aboard emergency rations for two weeks, two B-4 bags, a couple of handbags and briefcases, and navigational equipment. With the additional fuel we weren't sure she would get off.

Speeding down the runway I knew that this JU-88 was the heaviest and the most vicious airplane that I had ever flown. It was like trying to get a boxcar into the air. When we reached the proper take-off speed of 160 to 180 kilometers per hour it was still glued to the ground. By this time we had used up three-fourths of the runway and there was nothing we could do but sit there and pray that this hunk of crate would clear herself. Finally, in desperation, I snapped the switch which retracted her wheels and we swooshed through the tops of a row of palm trees.

Lieutenant Cook grinned. "The Wogs (natives) probably picked up a few dates on that one."

At about 4,000 feet we levelled off and had time to check the reason for such a delayed take-off. Much to my astonishment, when I tried to raise the flaps the signals showed they were already in up position. The automatic flaps were too automatic.

For an hour we circled the field, and we noticed that the engines were smoking considerably more than we were used to in American planes. But this we considered normal, because in combat we had seen a lot of enemy aircraft trailing this smoke. It didn't worry us. We negotiated a landing, ate a light lunch, refueled and took off on the first leg of our cross-continent, trans-Atlantic flight. This time the ship got into the air after a short run and from then on we began to have more and more confidence in the plane Hitler had given us. Our first destination was 1,100 miles distant, a small airfield down on the Nile in the very heart of Africa. We landed 4 hours and 20 minutes later, and during the flight we picked up several important bits of information about the aircraft which proved valuable later. They included:

(1) An oscillating condition developed in the cowl flaps caused by improper setting of the cowl flap selectors.
(2) The fuel system worked perfectly and we got a working check, including transfer of fuel from our droppable wing tanks to the main tanks.
(3) The importance of tightening fuel and oil tank caps. We lost considerable oil from one engine due to this condition. But we learned not to fill the tanks (oil) at more than two-thirds capacity or they would bubble over.
(4) At the altitudes above 10,000 feet we found that certain cylinders began to clear up from their smoking.
(5) We had an opportunity to check the German navigational equipment and the automatic pilot and we found that both were very efficient.
(6) On this initial leg of the flight we had a chance to test the German radio and found that it could transmit and receive, and that it had a very good radio compass which could take bearings or be used for homing. Actually it combines our radio compass and navigational compass into one unit.

When we arrived at our first stop, ground crews had our special consignment of 91 octane gasoline ready. They began immediately to refuel and check the ship. That night both Lieutenant Cook and I didn't get much sleep—only a couple of hours—because we were busy puttering around the plane and working out plans for the following day's flight, which was 1,450 miles distant across desert and jungle territory. We took off at daybreak (Oct. 9) and the flight was uneventful.

At one point along the route, however, I computed a ground speed of 285 mph, which was stepping right along for a bomber of this size. On this occasion we were helped along with a slight tail wind. On the average our speed was about 240 mph, a fairly fast cruising speed.

We were in the air again within an hour and this time headed for the Gold Coast, our last stop on the continent before heading out over the Atlantic. So far we had encountered no friendly aircraft, but wherever we landed the natives and soldiers flocked around.

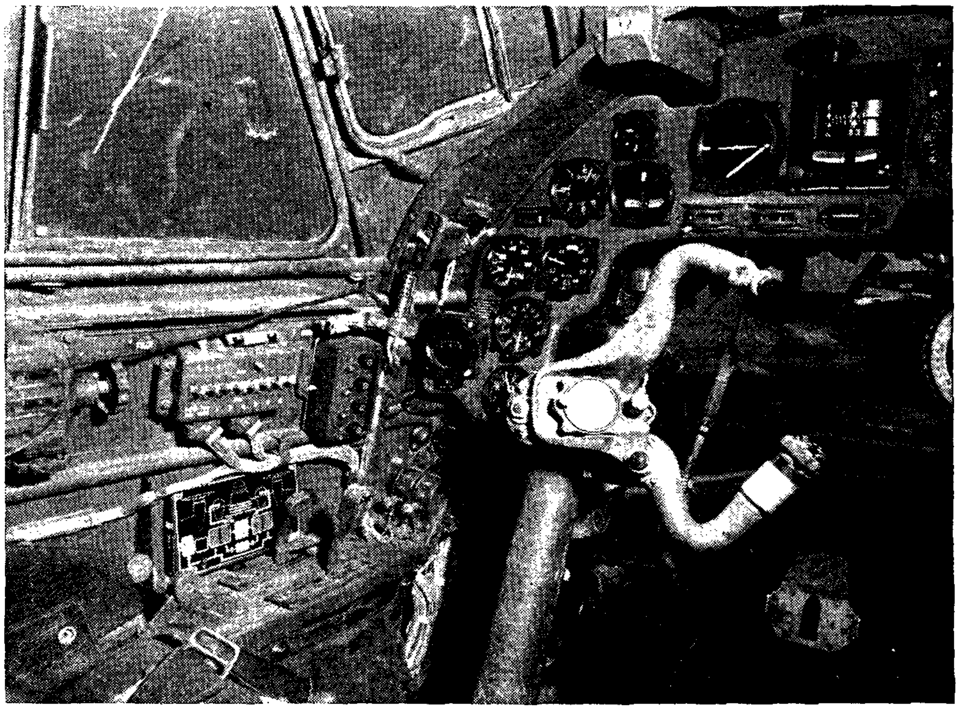
One major asked if the plane were one of our new bombers.

Just out of our field we overtook a large C-87 transport and its pilot was one of our close friends whom we had met back at the airfield in Cairo. This was the ship we were originally scheduled to take back to America. We decided then and there to follow the big ship on our first over-water hop and discussed the plans with its pilot when we landed.

The over-water leg of our journey was just ahead. We were shooting for a tiny dot in the middle of the South Atlantic 1,350 miles away. We were relying almost solely on German instruments to steer us to a spot six miles wide and eight miles long. Of course, we had the American radio compass to help us with navigation problems. As an added precaution we took along an extra battery should the electric system fail.

There was no trouble in the take-off

This view of a portion of the JU-88 cockpit illustrates what Major Newby meant when he referred to "more damned gadgets than any plane I had ever flown."



and the ship handled very smoothly in the over-ocean air, but shortly after we left the coast behind there was a solid overcast and we flew into the thick of it. Here we lost sight of the C-87 but we knew the approximate location.

SUDDENLY there was a loud rustling of wind, and cold air struck me on the shoulder. I looked around and saw Lieutenant Cook, white and scared stiff, looking down through the hatch which had come open when he accidentally brushed against the safety latch. The little Irishman was standing there, without any parachute, over a big opening in the bottom of the fuselage and the only thing which had saved him was the fortunate position of his feet. Luckily he was able to brace himself and grab a fuselage cross strut. After struggling with the hatch for a few minutes he finally got it closed.

About an hour later, I glanced out the glass to the left and saw a vapor trail extending back from the wing tip. I couldn't understand it at this altitude (approximately 10,000 feet) and we proceeded to check the strange occurrence. That vapor trail was an expensive one. It was pure gasoline overflow to the wing tips. Our transfer system had put in too much somewhere along the line. The flow stopped and we didn't lose too much precious fuel.

When we emerged from another cloud bank we saw one of the most spectacular sights I had ever witnessed. Before us scattered out over the sky was a flight of Douglas A-20s being ferried to the combat zones. One of them came in close and circled once to look us over. We waved to the pilot and he continued on course.

Half an hour later we were picked up by a couple of P-39s that came in on a fast swipe and left us hanging there between two beautiful vapor trails. Then they parked, one on each of our wing tips, and escorted us to the small island.

There was unfortunate news. The only gasoline on the island was 100 octane. But there was no choice, so the tanks were loaded with the stuff and during preliminary runs it didn't seem to do the engines any harm. We were soon in the air again, headed for the coast of South America—and home.

The ship handled perfectly and the engines purred. I took in the ocean below with the ease of looking out of a transport's window. The boys in the C-87 had nothing on us. When we were only a couple of hours out, I yelled:

"Hey Cookie, these engines are OK. They'll take anything."

Just then, two cylinders on the left bank blew and there was the loudest racket you could imagine, with the engine spitting and spluttering like an underfed tractor. In a couple of minutes the cylinders went completely dead and much to our surprise the engine continued to run without much loss in power. I don't know of anything we could have done about it except continue on course because we were still 400 miles from the coast. But the other eleven cylinders continued to function and they got us in.

Now I know how Columbus felt when he sighted land. It was a glorious feeling when the coastline of South America came into view, and we lived every foot of it as we approached. The ship, despite those bets back in Africa, was proving up. She had crossed the Atlantic, the first German combat airplane ever to do the trick—and with an American crew!

But we weren't down yet. The field was large and the communications were fine, but we had to circle for half an hour before the ferry ship got into the air. Then we lowered the gear and prepared to land.

The wheels would go only halfway down. We tried everything, but still the gear stuck.

Finally, it was necessary to try out the Nazi hand hydraulic emergency selector for lowering the wheels. It was tough cranking, but we got them down and came in for the landing.

At Natal, in one of the best officers' clubs anywhere, we got our first real sleep since leaving Cairo and our first taste of good food and good drink since we had left the States almost a year and a half ago.

The next day we checked up on the landing gear failure and discovered what was wrong. There was a leak in one of the flap selectors which had pumped out all the fluid. The only other damaging factor was the two dead spark plugs caused by the cylinders in the left engine. It was decided to remove all the spark plugs and clean them. This time, because we knew how, the job was done in two hours instead of two days.

There were no spare Nazi plugs here. We had to install American-made ones and this meant rewiring the ignition harness to adapt the American plugs to the engine. We attributed the fact that the smoking had cleared during the flight to the increased gaps in the spark plugs, left there when they were installed in Africa. We kept the same arrangement.

Since there was no lap ahead of us more than 900 miles, we removed the P-38 droppable tanks, thus increasing our speed about twelve miles per hour and lightening the airplane considerably.

The take-off for our next destination in Brazil, a small field on the Amazon, was a contrast to the one that day in Cairo. This Nazi buggy fairly leaped into the air and flew like an airplane again. Now it had won our respect. We had utmost confidence in it. The JU-88 was a damned good airplane in any man's language.

We had further proof when we made the flight in record time (3 hours and 35 minutes). Once over the field they wouldn't let us come in. For some reason, every time we came in for an approach the red light popped up and we had to climb back up again. It became boring and we couldn't understand it. The field was clear. There were no planes in the air. The runways looked all right even though they were shorter than any we had yet used.

I CONTACTED the tower on the radio.

"What gives? My gas is running low."

The answer came back: "Sorry, any aircraft that made it from your previous destination to this field in so short a time is too hot to land here."

I told him this Junkers could land anywhere and then proceeded to demonstrate my point. We got in without trouble. Landing is one thing this ship does expertly. It's built right in her design. She sits high on the ground, and when she hits and the tail settles the angle of attack increases and slows the ship. Too, the flaps and ailerons lower simultaneously and almost stop the airplane in the air.

Once in the air again, we headed for a field in British Guiana over some of the most rugged country in the world. We had no more than hit our cruising altitude (10,500 feet) directly over the big Amazon River, when the right engine quit cold. "Cookie" made a quick inspection as the airplane lost several hundred feet altitude. He snapped on the booster pump, an emergency device, and the engine caught up again.

On this flight we used no check points, relying entirely upon our German instruments, and came out only half a mile off our predetermined course. We had to fly around thunder showers, but had little difficulty. Our next stop was Trinidad and this landing was accomplished with a stuck throttle. The landing was rough. From here we took off for Puerto Rico and, skirting a tornado, suffered some very rough air, but the ship proved it could take it.

That was our last stop before hitting the States and we were plenty happy when the ship finally came to earth at Morrison Field, Fla., although we learned that we had caused considerable anxiety along the route up the coastline because several air raid spotters had reported a German plane overhead. Three identified it as a JU-88.

The rest of the flight was routine. Florida to Memphis and on to Wright Field, where we landed about sundown on October 14—five and a half days and more than 12,000 miles from our starting point.

"Baksheesh" was turned over to the Foreign Evaluations Branch, a gift well appreciated for its value in future design and engineering developments in American planes.

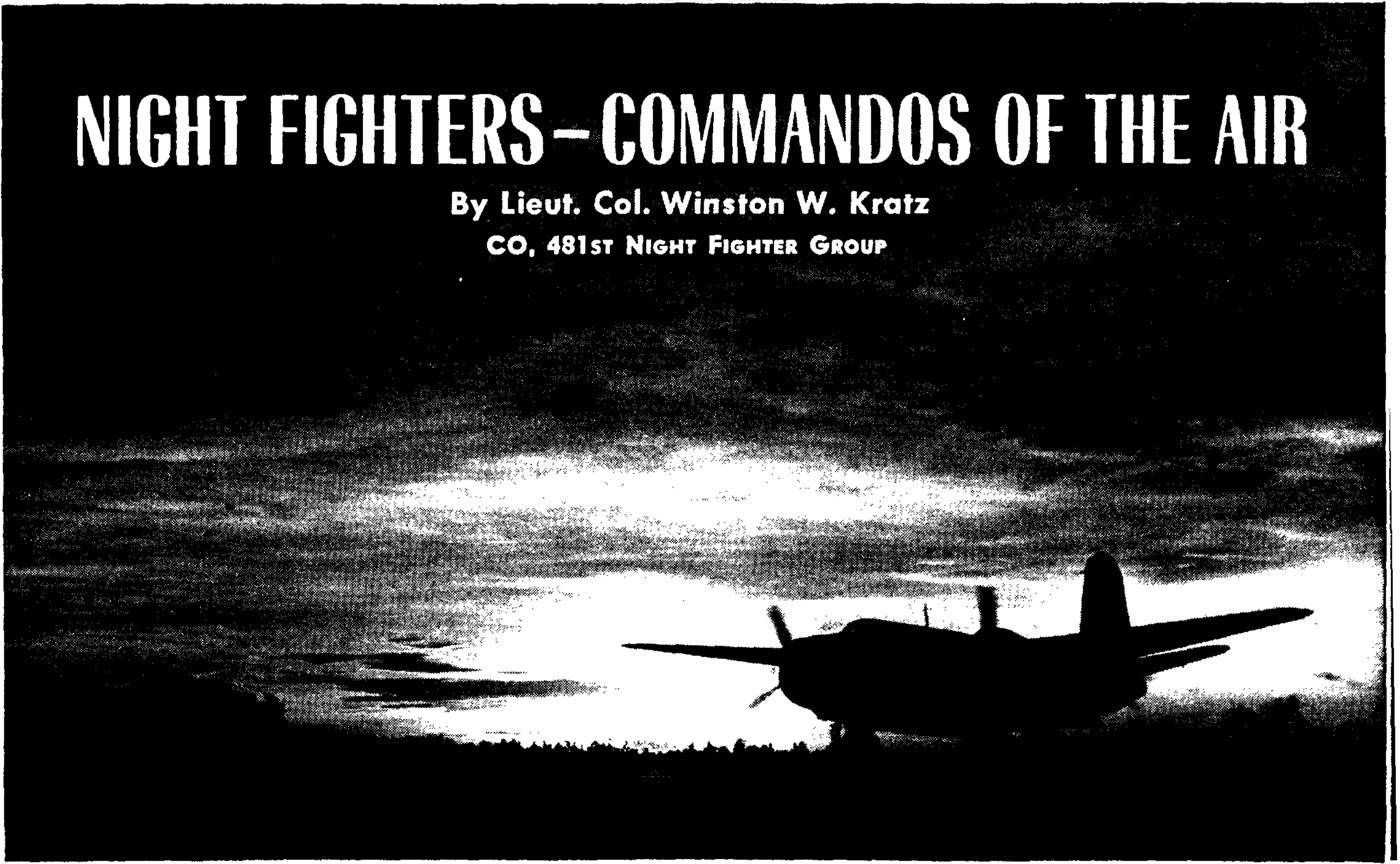
One thing sure:

The JU-88 can fly the Atlantic. ☆

NIGHT FIGHTERS—COMMANDOS OF THE AIR

By Lieut. Col. Winston W. Kratz

CO, 481st Night Fighter Group



Veterans of the air war over Britain are polishing our night fighter squadrons for combat.

During the last year a new breed of fighter has been developed in this country. Most people know little about him, although he has been wreaking havoc with the Germans and Japs.

This new breed is a "fighter team"—pilot and radio observer—that flies at night. Although comparatively new in the USAAF, these fighter teams first saw battle with the RAF in the spring of 1941. May 10 was the date. On that night, 33 German bombers were blasted out of the sky by these night fighters during a mass raid over England. It was the last mass raid.

Today these twin-engine night fighter planes are raiding enemy bomber formations, ground communications and airdromes in all war theatres. They saw action over Bone and Algiers in North Africa; they helped pave the way for the invasion of Sicily and Italy; they have raided installations in France, Germany and the Lowlands hundreds of times; and they are raising hell with the Japs in the Southwest Pacific.

These black-painted aerial commandos represent one of the most successful advances in aerial warfare and well may contribute an all-important part in future actions—both offensive and defensive.

The night fighter, when stripped down to its skeleton, is a twin-engine plane with heavy, concentrated firepower and gasoline capacity for long range, manned by a pilot and a radio observer. It is specially adapted to furnish air defense at night or during periods of low visibility in the daytime, being more flexible than anti-aircraft artillery and able to defend a larger sector. In addition to its defensive mission, however, the same night fighter has proved extremely effective as an intruder—slipping over enemy territory at night to shoot up railroad trains, airdromes, bridges and other installations of military importance.

First airplanes to be used as night fighters by the British were twin-engine Blenheims and Beaufighters, for defense over England, and single-engine Hurricanes for offensive intruder raids. Later, the versatile A-20 was pressed into service (known as the Havoc in the RAF). Today, however, the faster Mosquito is being used for most of the British night fighting.

Florida is the center of all night fighter training for the AAF. Intruder and interception missions are being flown night after night over the Florida peninsula and the Gulf of Mexico by the 481st Night Fighter Group headquartered at Orlando. Satellite fields, where training is conducted under simulated combat conditions, are located near the towns of Kissimmee and Dunnellon, Fla.

Lieut. Col. Winston W. Kratz

Basic squadrons are the 348th at Orlando, which conducts primary training of radio observers and pilots; the 349th at Kissimmee, responsible for basic training of the night fighter team; and the 420th at Dunnellon, which whips the personnel of each new squadron into condition for assignment to a war theatre.

The pilots in the night fighter squadrons are hand-picked men who are better-than-average flyers and who are particularly proficient in instrument flying. These men generally are the ones who are seeking the most adventurous branch of the Air Forces. They learn to love the dark. They don't get lonesome for they are imbued with one idea only—to stalk the enemy and shoot him down.

But night fighter pilots and radio observers (ROs) are not born overnight; it takes months of classroom instruction, ground training, instrument and night flying before they can be released to combat zones. Prerequisites for night fighter school are stiff; each student pilot must have 100 hours in B-25s after completion of twin-engine training.

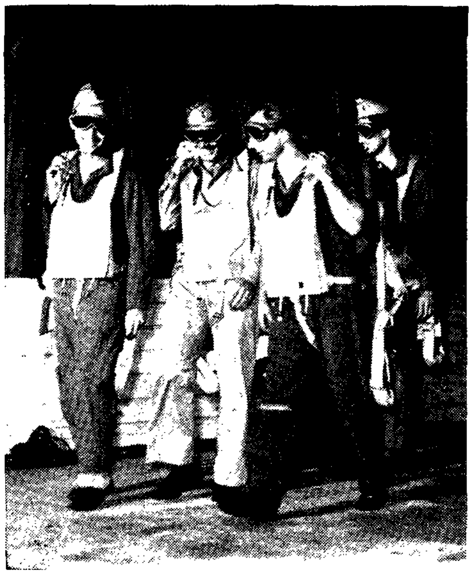
The principal reason for this stiff requirement is that "night fighting" is different. There usually are no visual reference points on the ground to assist in navigation; strict radio silence often must be maintained throughout the mission—you can receive but you can't send; you must be able to fly instruments, if necessary, 100 percent of the time; you must coordinate your flying with the instructions of your RO when you are seeking to intercept an enemy plane; you must be able to spot the silhouette of the enemy in time to maneuver into position to give him that fatal burst from your guns before he spots you. Then, you must be able to find your way back home after you have chased the enemy through the skies for forty or perhaps eighty miles.

This kind of flying isn't second nature to pilots just out of flight school. The goal of the night fighter training program, therefore, is to make night flying the easiest thing in the world to do. When newly organized squadrons leave the Florida school for overseas duty, their pilots have flown at least 150 hours on instruments or at night—and during most of this time they have been working with their RO teammates.

Instructors in the Florida schools know that thorough training is invaluable, for many of them have had experience in night fighters over England and the Continent. Some carry decorations for jobs well done while with the RAF, for they had a part in winning the air from the Luftwaffe over England, the Channel and the Lowlands. From actual experience and observation, these night fighter instructors have developed and are operating what is believed to be the most comprehensive training school for night fighter crews in the world. Tactics and history of night fighters, as written over Britain, provide the basic principles for the curriculum. Our own scientific developments of aircraft detector devices enable students to learn the principles of aircraft interception with the most advanced radio equipment and training devices in the world.

Until radio detection and ranging apparatus was perfected as a weapon of aerial warfare, interception of enemy aircraft at night was practically impossible. Now, night fighters have all of the deadly precision of scientific instruments when properly operated.

Interceptor missions are carefully planned operations that provide a blanket cover over military target areas. Night fighters patrol specific sectors from dusk to dawn waiting for enemy aircraft to enter the domain which they are assigned to defend. Ground detector stations plot courses of all enemy aircraft and notify the night fighter ROs when to prepare for interception of an enemy plane that is approaching their sector. Upon receiving an alert from this ground controller, the RO advises his pilot to move to a certain locale. Teamwork of the ground controller, the RO and the pilot then enables the night fighter to seek out the enemy plane and destroy it.


These pilots wear night-adapter goggles as they leave the operations tent for a night mission.

Largely through cooperation of the intercepting plane's RO with ground detector stations, the night fighter can maneuver to within a few hundred yards of any enemy aircraft flying through a particular sector. At this point, the last punch must be delivered by the pilot. His night vision, his judgment of range and his flying ability are called upon in the next few seconds when he must slip up behind the enemy aircraft and destroy it with a heavy burst from his guns.

Although it might seem that friendly planes would be shot down, this danger has been circumvented through perfection of equipment that enables our airmen to identify the target they are trailing.

Since the decline in enemy activity over Britain in the summer of 1941, intruder tactics have been developed extensively over the Continent. Occasionally intruders have joined Nazi bomber formations returning to their airdromes. As one of the bombers lets down its wheels to approach the lighted field for a landing, the intruder comes in on his tail, blasts the Nazi with his guns, strafes the field and hedge-hops back home

In addition to the destruction of German aircraft, military installations and communications, use of night fighters on offensive intruder sweeps has had a double-barrelled effect in putting added strain on the Germans.

Repeated shooting up of coastal airdromes and of Nazi bombers as they returned to their bases forced abandonment of such advance bases in France and the Lowlands. Airdromes were moved back to a line approximately 100 miles from the Channel coast, thus forcing the Germans to carry more gasoline and fewer bombs and fly longer hours to reach the same targets. It was a major victory for the night intruders.

The secondary success of intruder raids was a psychological jab at German Luftwaffe morale. Strafing of enemy airdromes took some of the starch out of the freshly indoctrinated Nazi youths who were at front-line bases for the first time since leaving schools that had been teaching them that final victory was near at hand. Luftwaffe veteran morale also was dealt a sharp blow by intruder tactics. In addition to being harrassed by night fighters on take-off, during the entire mission and upon return to their bases, Nazi crews were compelled to return to different fields after each mission in an effort to avoid attacks by the night fighters that lurked over the take-off airdromes until the return of the German bombers. This dispersal of bomber strength also made it more difficult to organize large raids since only a few planes could operate safely from any one airdrome.

Successful accomplishment of such intruder missions largely depends upon the thoroughness of preparation. To gain maximum night vision, night fighter crews wear red adapter goggles for thirty minutes before take-off. Because flights may be at altitudes from tree-top level up to or above 20,000 feet, oxygen masks are worn as a further precaution in safeguarding night vision, for any oxygen lack impairs vision.

Before checking out on any mission, the successful night fighter pilot will pore over all available intelligence reports on disposition of anti-aircraft guns, location and strength of enemy airdromes, communication centers, transportation routes, geography and hundreds of others items which may appear insignificant but may mean the difference between spotting and missing a target, between flying around or over anti-aircraft and searchlight defenses, between finding the way back home or getting lost.

During the first month at the night fighter squadron school at Orlando, pilots selected from B-25 flight schools learn to fly night fighter aircraft. A-20s are flown first until the pilot is able to step into the next type of plane. Day transition flying (including single-engine operation, high altitude flying with oxygen, low altitude flying at a maximum altitude of 200 feet, formation flying and radio aid familiarization) totals 25 hours; night transition flying totals 20 hours and instrument time totals 25 hours. Subjects taught pilots in their ground school training include operational technique, air defense organization, night combat hygiene, recognition and performance, and advanced courses in communication, instruments and other subjects studied during cadet flight training. Ninety hours are devoted to ground instruction.

Night fighter radio personnel are instructed in blinker light signals.

Upon completion of this primary training at Orlando, the night fighter pilots are transferred to Kissimmee's 349th Night Fighter Squadron where they begin flying interception missions and where they team up with their ROs for the first time.

Basic flying totals 68 hours. Ground instruction of 53 hours covers combat intelligence, combat operations, additional courses in recognition and identification of aircraft.

The final month of advanced training is with the 420th Night Fighter Squadron at Dunnellon. At this airdrome, all flights are made under simulated combat conditions. Sixty-two hours are spent in the air with the RO, flying interception missions, flying night intruder missions, practicing gunnery and perfecting instrument approaches. Ground school training of 67 hours is a continuation of courses studied in primary and basic. By the end of this final period, at least 31 hours of Link trainer time must have been accumulated.

The other half of the night fighter team, the RO, has an equally strenuous and thorough training program.

Upon completion of his four-week preliminary radio training at Boca Raton, Fla., the RO arrives at Orlando for primary training in night fighting. Forty-eight hours are spent in the air in AT-11s learning how to operate and interpret detector equipment. This plane is equipped to carry two ROs and their instructor. On the ground, 86 hours are devoted to such subjects as interception technique, recognition and performance, air defense, parachute instructions, radio code and blinker, combat hygiene, and instruction of Link trainer pilots on the flying of interception courses.

After the primary training, the ROs move to Kissimmee to join up with their night fighter pilots where they learn to cooperate with them on simulated missions which total 63 hours. New ground courses during this period include combat intelligence and navigation; advanced study is continued on air defense, interception technique, detector equipment, recognition and code.

At Dunnellon, the advanced training period requires 62 hours simulated combat flying (including gunnery and navigation) and 74 hours of additional ground school on subjects already being studied.

After three months of this intensive training, the pilot and the RO have been molded into a "fighter team" that functions as one mind. At this time, the newly trained night fighter squadron is brought together for the first time as a complete organization. One more month of simulated combat operations, while the squadron assembles its full complement of men and materiel, is required before the unit is ready to go overseas.

Throughout the training period for the ROs and the pilots, other personnel are trained in the maintenance of night fighter planes, in the maintenance of radio and detection equipment, and in administration of all squadron activities. Thus, at the end of three months, the squadron organization, which has existed only on paper or in scattered groups of students, is integrated and begins operating as an independent night fighter squadron.

Night fighter pilot training is far different from that of cadet flying days. Instructors at the night fighter school believe in making training flights realistic. Unsuspecting students sometimes return from interception missions only to discover that an instructor had slipped up behind them and theoretically shot them down. Occasionally RO instructors jimmy the radio set tuning to keep the RO on his toes.

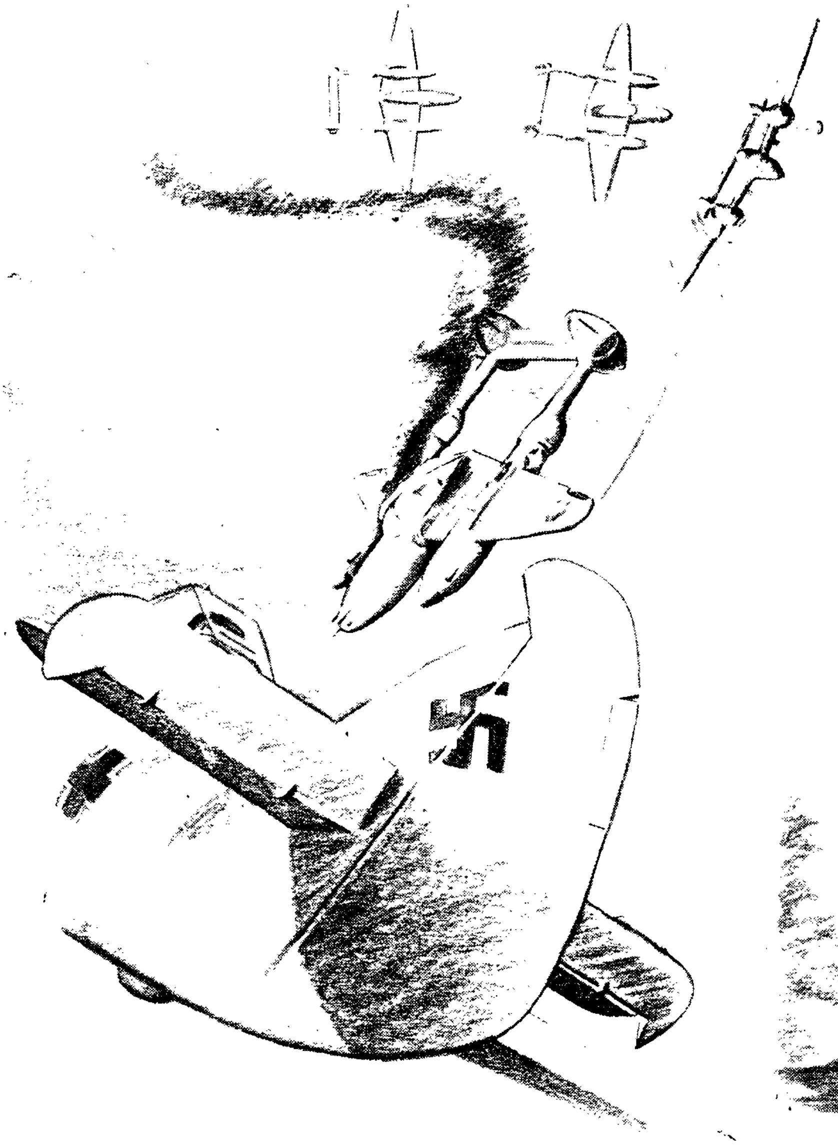
Reports from war theatres already are coming back to Orlando's three "mother" squadrons citing successes of night fighter school graduates. The demise of "Washing Machine Charlie" over Guadalcanal was one of the first.

For eight months a two-engined Jap bomber, called "Washing Machine Charlie" because its engines clattered like a mechanical tub, paid almost nightly visits to Henderson Field. Flying between 20,000 and 25,000 feet, the Nip would arrive about midnight, circle the field area and unload some 500-pound bombs. Ack-ack failed to bring him down and fighters that attempted to intercept him in the darkness never succeeded in making contact.

Then one night, he came over after our night fighters had arrived. He could not be spotted—but his engines, and those of the night fighter could be heard. Suddenly there was an explosion and "Washing Machine Charlie" fell in flames. His nights of nuisance raiding had ended.

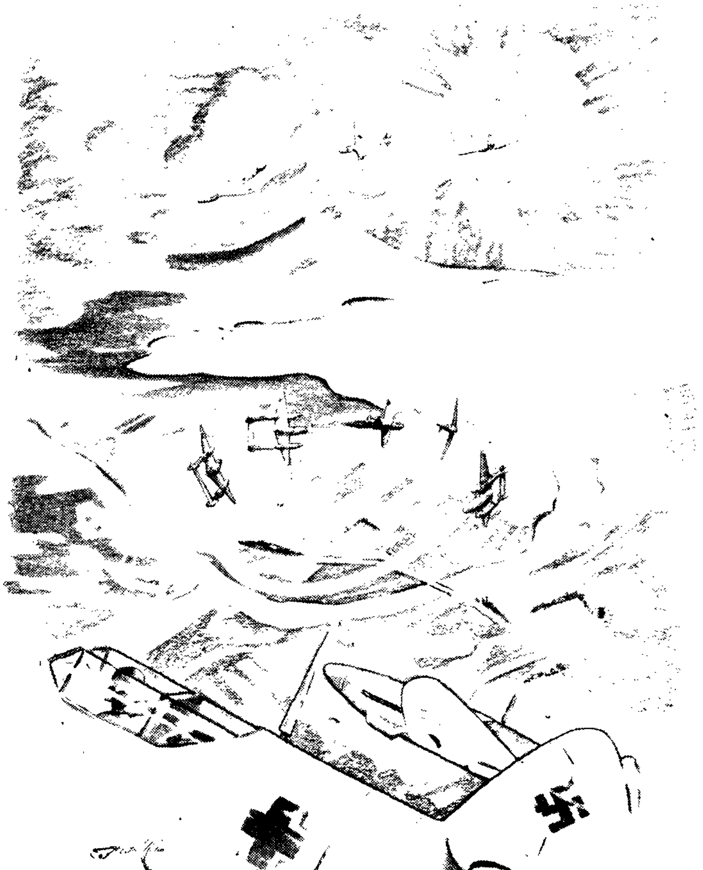
And since that time, our night fighters have been making short work of other enemy prowlers, for, with the combination of highly skilled night "fighter teams" and the world's best radio detection and ranging equipment, enemy aircraft can be located and blasted from the air with devastating accuracy. ☆

MEDITERRANEAN



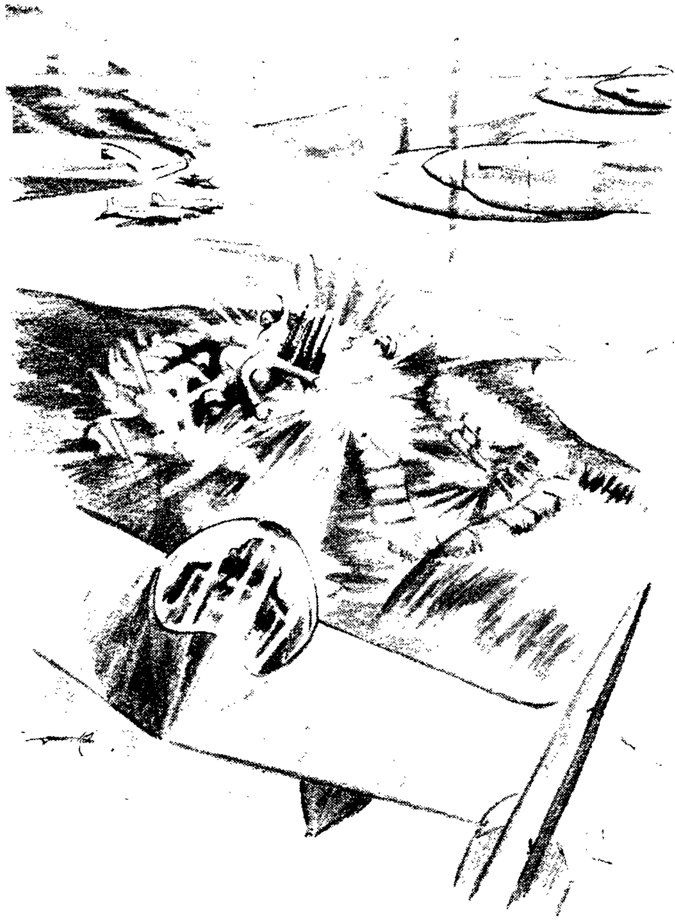
Round and Round. Our mission was to act as escort for a B-17 formation in an attack on the Garbini airdromes in northern Sicily. About thirty ME-109s jumped the formation as the bombers were leaving the target. We engaged them and soon all fighters were circling. One of our flights broke off from the squadron and went around in a luftberry. There were three P-38s and two Nazi planes on the tail of the last 38. Five more ME-109s were waiting above the luftberry to dive down on the first American plane to break out of the circle. The rest of us had to move on but we later learned the outcome. The flight leader destroyed one ME-109 and so severely damaged another that it had to break off. The flight got away from the waiting Germans, but the 38s had been engaged so long they had to land at Malta to refuel before returning home.

Close Call. I was tail-end Charlie when we escorted a B-17 formation over Trapani, Sicily, on May 6. The bombers were coming out of the target after their run when my 38 developed engine trouble. I feathered the prop of the bad engine and prepared to fly home under the bombers for protection. Suddenly the call came over the radio, "Jerry high at six o'clock." The enemy planes went right for me because I was straggling, and in a moment one of them was on my tail throwing everything at me. When I put on all the power I had on the good left engine, it threw me into a violent snap roll and down into a spin. This accidental maneuver saved my life for the enemy fighter couldn't keep his sights on me. He followed me down in a spiral. Fortunately, at 20,000 feet I found myself in a cloud layer. The Hun lost me in it and when he broke out, he was over a mile away. I kept dropping down until I was about fifty feet above the water and went on home at that altitude.

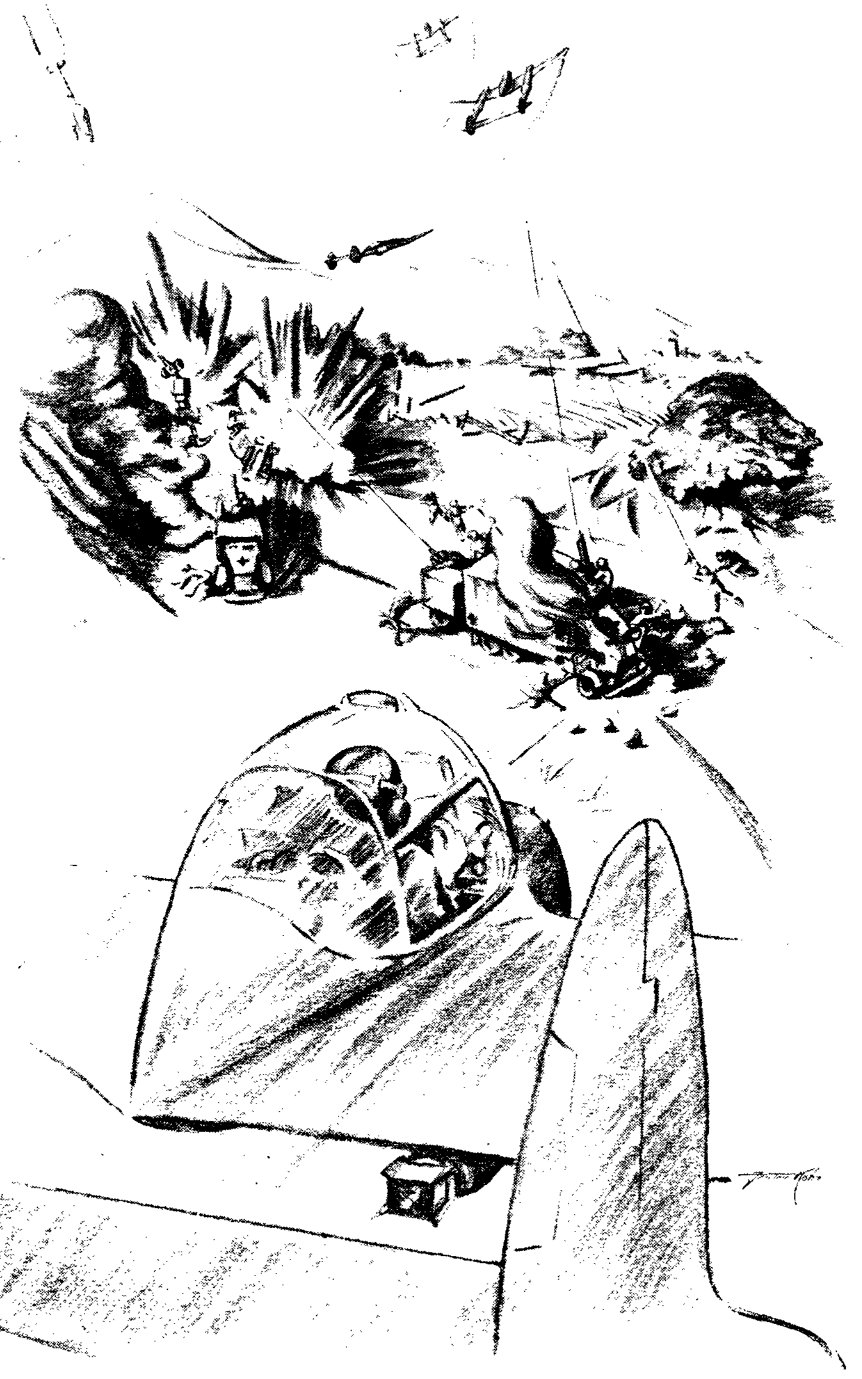


CTION IN A P-38

By LIEUT. FREDRIC L. KOHN



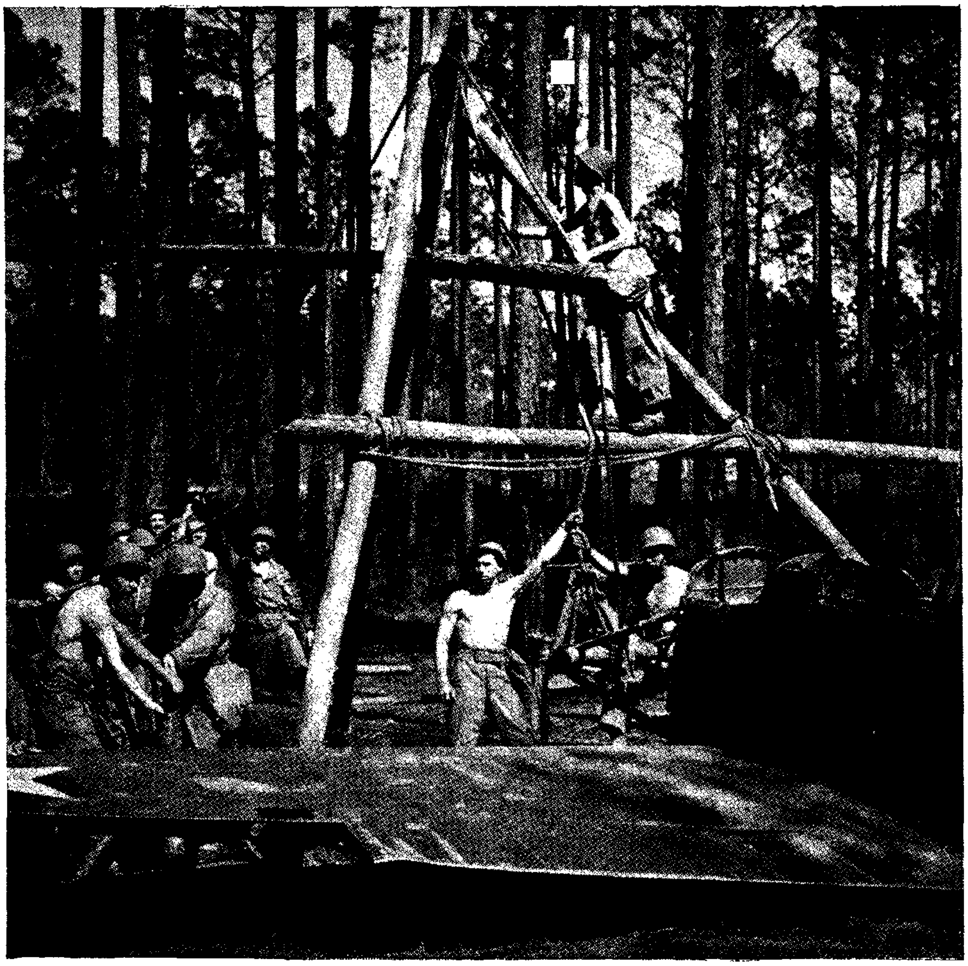
Cutting Supply Lines. On July 11, the enemy was moving supplies to troops who were engaging the British at Augusta, Sicily. We came over and sighted a convoy of about thirty trucks. We caught the trucks by surprise in a dive-bombing attack, destroying a number of them before they knew what was happening. We strafed the others until the job was finished.



Cooperation. On May 14, we had just dive-bombed the harbor and ships at Portotorres, Sardinia, and had moved on to strafe aircraft at Alghero. Coming in on one side, I noticed that a pit was setting up a barrage directly in line with the four P-38s that were moving in to destroy the hangars at another end of the field. The other four planes obviously couldn't see the barrage. I kicked rudder and gave the enemy a burst to distract them momentarily from the four 38s. Then I followed through quickly and brought all my fire to bear on the pit destroying the crew and guns. The other 38s took care of the hangars, and, in all, our squadron destroyed twelve enemy aircraft on the ground.

ILLUSTRATED BY THE AUTHOR

MISSISSIPPI GUADALCANAL



At Mississippi's "Guadalcanal" all devices are strictly homemade. Students at left bring up a log shoring frame as a wing rest once the fuselage is hoisted sufficiently.

By Cpl. Carl Happel

GULFPORT FIELD, MISS.

OUR new assistant operations officer, First Lieut. Peter J. Kolas, became curious the other day about a place called Guadalcanal we have here at Gulfport Field, Miss. Lieutenant Kolas, it seemed, had spent a lot of time in the Southwest Pacific and on the *real* Guadalcanal and its Henderson Field.

It was explained to him that ours is a woodsy spot where student airplane mechanics spent a few weeks of their training period in company with mosquitoes and snakes. While in the woods, they work with improvised equipment and live under conditions as close to those of combat as a number of devilishly imaginative sergeants can make them. It was rather inevitable, it was explained further to Lieutenant Kolas, that the students should call the place Guadalcanal. It seemed that bad to them.

Lieutenant Kolas, who had shuttled supplies into Henderson Field and taken out wounded during the early days of the fighting, said he would like to see how the simulated Guadalcanal compared to the real thing. So we took him on a tour of our facsimile.

It was on one of those hot, hazy, Gulf days that we made the trip. When we arrived at the area a soldier on guard, carrying an automatic shotgun, halted us at a bridge the mechs had built. He called the corporal of the guard who, wearing a helmet, shoes, leggings, brown swimming trunks and a gas mask at his side, trotted up out of the swampy forest. The corporal passed us and we crossed the bridge over a small stream.

"We had a stream too," Lieutenant Kolas recalled, "right alongside Henderson Field. The Tenaru River. Muddy swimming."

We followed the corporal down a path cut through thick undergrowth, wild grapevines, palmetto shrubs and tall grass. The path was marked by a strand of wire on either side. We could hear the roar of planes from deep in the woods.

"We're fussy about our camouflage," the corporal said. "The men have to stick to regular paths. If they'd barge off and make their own, it might show up in the pictures the photo plane makes of us."

A familiar sound rang through the trees—a sharp banging of steel pipe, and then the cry, "Gas!" The corporal automatically whipped on his mask and kept right on walking.

"It's all right, sir," his muffled voice came through the speaking diaphragm. "The wind's in the other direction. Just tear gas. We lay it down to give the students practice in working with their masks on."

Ahead to our left, men were doing just that. Masks on, they were working over planes dispersed among trees, many of them under natural camouflage; the ones that were not under trees or vines were covered with camouflage nets. Many of the students, all well tanned, wore only trunks with their helmets and leggings and shoes, which are regulation. Several were sprouting beards.

Under a yard-thick pine some mechs were pre-flighting a P-40, taking turns at sitting in the cockpit to start and check the engine for a theoretical pilot about to leave on a mission. One fellow, sweating and straining, wound the hand crank for the inertia starter. "Make muscles, Skinny," another advised him. Using the crank instead of batteries is part of the training.

Near the P-40, another group swarmed over a P-39 with its cowling off. An instructor explained they were cutting new gaskets for valve mechanism covers and checking the electrical system as part of the regular 100-hour inspection. As a matter of interest, he pointed out some mess kits hidden under shrubbery. Students were required to carry them at all times. "We tell them, 'Suppose they bomb your tent?' " the instructor said. It was a gig, however, to leave the kits exposed where the shiny metal could be seen by a plane overhead. Lieutenant Kolas looked over the crew chief stand beside the P-39. Not the metal kind, it was made of unbarked tree poles. So was the rack for holding the cowling and parts.

A jaybird called, and someone among the trees to our right imitated the call. We turned and saw two men busy with shovels. One of the diggers, Pfc. Ernest Oliphant, confirmed they were digging a slit trench. We'd seen other trenches as well as foxholes, near each plane. Oliphant and his companion were working in oozy, gray clay.

"You'd better lay logs on the bottom," the lieutenant said reminiscently. "Rain will sure make that bad. One time on Guadalcanal, I'd just been lucky enough

The bivouac area for student mechs at Gulfport Field brings back memories for a Southwest Pacific veteran.

to get a new pair of GI shoes—finally. I was wearing them when the Zeros came and I had to dive into a trench half-filled with mud. Did I cuss those Nips!"

Word of our visit had gotten around the bivouac, and Master Sgt. S. P. Bartczak, senior instructor, came up to talk with us. Young and stocky he was wearing faded blue bathing trunks and sunglasses. He said the officer in charge, Lieut. Luman Wells, would be gone for the day, having just been called by telephone from the operations shack toward which we had been headed in a vague way.

BARTCZAK asked us to inspect the camouflage area with him. There were no planes in this part of the woods, and scattered through it were samples of all kinds of nets. There was a full-drape that looked like an Arab tent made of fishnet; its front could be lifted curtainwise to admit a ship and conceal it even from ground view. Between pines were stretched little hammock nets, with branches on top, for hiding openings above paths.

"Now this is very familiar," Lieutenant Kolas said when we came upon a miniature "flat top" for use in open country. "I remember one they put up to assemble some P-40s under on a little island out there. I was a pursuit pilot then. The net worked fine. We weren't bothered by Jap bombers at all."

We walked on to a point where a jungle taxi strip had been cleared in the woods. At the far end students were trying to snake a plane through the trees. There was considerable shouting of orders and some profanity. Bartczak observed a little bitterly, "Damn it, there's exactly enough room between those trees if they fishtail it right."

"They'll use that a lot," the lieutenant said. "Many a night on the island I've watched Miko, my old crew chief, and the other mechs putting ships to bed among the coconuts just that way. You fellows pick practical projects, sergeant."

"We try to get the main ones," Bartczak said. "It all stands for something. A major assembly means a ground loop. Patching holes, that's from bullets. After every raid—and our siren is good and loud—the flight and crew chiefs go around slipping troubles in the ships that bombs might have caused. See our revetment?"

He pointed to a standard embankment of earth around a plane, and then led us to a dummy craft made of chicken wire frame filled with dried leaves, its resting place open to the sky—a decoy job.

"We often used old wrecks for that," Kolas said. "The Nips will bomb anything that looks like a plane."

"Was it much of a job to land on Henderson Field?" Bartczak asked. "Did they make it tough?"

"You'd often have to start running for a foxhole the second your wheels stopped," the lieutenant replied. "If it wasn't an air raid it was that battery in the hills. You didn't mind Pistol Pete so much, or Washing Machine Charlie's visit every night, or those Jap voices the first few weeks chanting across the plain in the dark. 'All Marines will be dead tomorrow.' What bothered you was that constant shelling. Jap cruisers and destroyers would go up and down the strait all night and pour it into the field."

Men in a long single file went past us at the side of the road, reminding us it was time for noon chow. After telling us the single-file rule—to present as small a target as possible—was strictly enforced, Bartczak led us to the operations office, a tarpaper covered shack, to find extra mess kits. He found two on a table where a giant moccasin skin was stretched down with thumb tacks.

This student mech works under a camouflage net with his gas mask in place after gas alert has sounded.

This gnarled, bent oak tree supports a Lister bag and furnishes camouflage foliage for part of the field kitchen seen in background.

"Well, at least we didn't have snakes out there," the lieutenant laughed.

At the "messhall," a grove of low trees among which tables had been placed, we picked up Tech. Sgt. Eli Caicuts, who had served as a crew chief in the Caribbean theatre. He and Kolas agreed that our Guadalcanal was just like the combat areas they had known. "I miss the biggest thing of all, though," said Kolas.

Caicuts looked at him and said, "Mud!" Kolas laughed.

"You should have been here last February," Bartczak interrupted. "That's why we named the place Guadalcanal."

During chow we listened to some students discussing the sergeant of the guard, who liked to sneak up on his men in the jungle-like night. "I heard the buzzard coming," said one young man with pride. Caicuts and Bartczak mentioned the pets the men find—'possums, chameleons, turtles, anything liable to show up in a foxhole. Kolas told of his pet Wallaby in the Southwest Pacific.

After we had eaten and had a cigarette, Bartczak said, "Let me show you some AM field engineering. The proof of the pudding."

He escorted us to an area where some men were hoisting an engine by means of a tall tripod, fashioned of logs and rope. "I guess you have seen them using that kind of frame to pull an engine change out there," he said to the lieutenant. "It's an important part of the job here to teach them how to make these and 'A' frames with logs—no nails allowed—and practice using them. Chances are there won't be any nice metal tube frames with rubber wheels where our boys are going. They're slated for first and second echelon bases, not depots with machine shops. A mechanic is lost unless he has a way of hoisting things.

"A simple Spanish windlass, for example—one or two crosspieces that wind up a rope when turned. One fellow showed us how to put a log between the crotches of two trees with a windlass at one end. He wound a prop off the ground with it; said that back home on the farm they lifted fresh-killed hogs that way to dress them.

"All you need is to get them started. We got as many Daniel Boones as the next part of the Army. 'Suppose you haven't any rope,' a man says. So we show him how to make rope by taking strips of burlap camouflage, which comes in reels, and fasten the ends to tips of a square wooden spindle. Wind the crank and you twist the strips into a rope. One student, deciding that was too slow, attached two strips to opposite lug bolts on a tractor, jacked up the wheel, put her in gear and had mass rope production."

"What about tools?" Lieutenant Kolas asked. "My crew chief Miko could always fix things even if he didn't have the proper tools with him."

Bartczak smacked at a couple of mosquitoes hitch-hiking on his chest. "We tell them to try. One man made a spark plug wrench by forming a section of galvanized water pipe around a piece of hexagon stock the same size as the spark plug. It worked. We've taken a section of flying wire from a plane and cut teeth in it with a file or hacksaw. It gives you a saw that'll cut a good-sized log."

We wandered around and looked at more improvisation. There were some shoring frames made of logs, a homemade crew chief stand, chocks fashioned from a pine trunk—everything woods-built except the plane. We stopped to watch some students installing "dead man" mooring anchors—half logs buried in the ground. No doubt, Bartczak suggested, the lieutenant had seen many of these used in active service.

"And built, too," said Kolas. "The mechs would work on them while their ship was on a mission. About the only real lumber we had was from packing boxes flown in. But," he halted significantly, "there's one thing. On *our* Guadalcanal, the crew chief stands I saw were the *regular metal kind.*"

"Must've had a good supply sergeant, sir," said Bartczak. "But, here, we are training them to expect the worst."

Not far away there began more shouting of instructions, and we walked over and found a group having some practice in the last-resort method of starting an engine—by shock cord. A length of elastic cord, attached to a propeller tip by a leather boot, was being stretched by half a dozen men tugging at a long rope tied to the cord. They were sweating.

"Switch on?" yelled a man holding another tip of the three-bladed prop. At a word from a man in the cockpit, he released his grasp. The tension in the cord whipped the heavy propeller around and it caught.

"I've seen them make a dozen tries," Kolas said above the roar of the engine, "but, I'll say this, the bungee starter is worth its salt out there."

"Talk about your Daniel Boones," Bartczak said. "One of our instructors figured out how one man could do the whole thing by himself. Suppose you haven't all these guys around? This instructor stuck a forked stick in the ground to hold the free end of the prop, tied a string to the stick and led the string to the cockpit. He stretched the cord by winding the rope on a Spanish windlass, and when he had enough tension he tied it. He then climbed in the cockpit and yanked the string. It worked."

Near us, two students soldering with a gas blow torch began arguing about the identity of a plane high overhead. They were beginning to wager.

"They get into the damndest arguments out here," Bartczak observed. "One fellow bet a whole gang the prop on a certain ship was a hydromatic. Then he took them to Tech Orders and proved he was right. He collected twelve bucks from the boys. It must be the woods."

At the end of the steamy afternoon, we came to one of the bivouac areas. Students were lounging or washing up under showers built from large gasoline tanks mounted on camouflaged frames. One fellow, soaping his beard, shouted, "I just thought: Did Grandpa wash his whiskers every time he washed his face?" Others were griping about the extremely modest trickle from the showers. Kolas said they had the same trouble on his Guadalcanal.

Then came mail call, and the men answered with much shouting. Then curiously, the grove became unnaturally quiet. Men were passing things, and you realized they were sharing their news, sharing it as something valuable, quite unlike the wisecracking in barracks at mail time. Here in the isolated woods, mail call was different. We were joined by the officer in charge, Lieutenant Wells, who returned to the area.

"That's one of the most typical things I've seen today," Kolas said to him. "We waited three months for our first mail. But even when it was coming in regularly, we would get it and then quiet down just like the fellows here."

"Yes, they begin to appreciate things here," Wells said as we headed for an exit from the area. "The maneuvers part of the training is fairly slight. Our main object is to give the men an idea of what it means to be a mechanic in the field; to put up with a thunderstorm and a broken fuel line at the same time; to take a healthy walk to find the supply shack or the aid station. We believe in dispersal. We also believe in making a piece of baling wire do. And we try to use all the ideas which men like your Miko have learned and passed back to us."

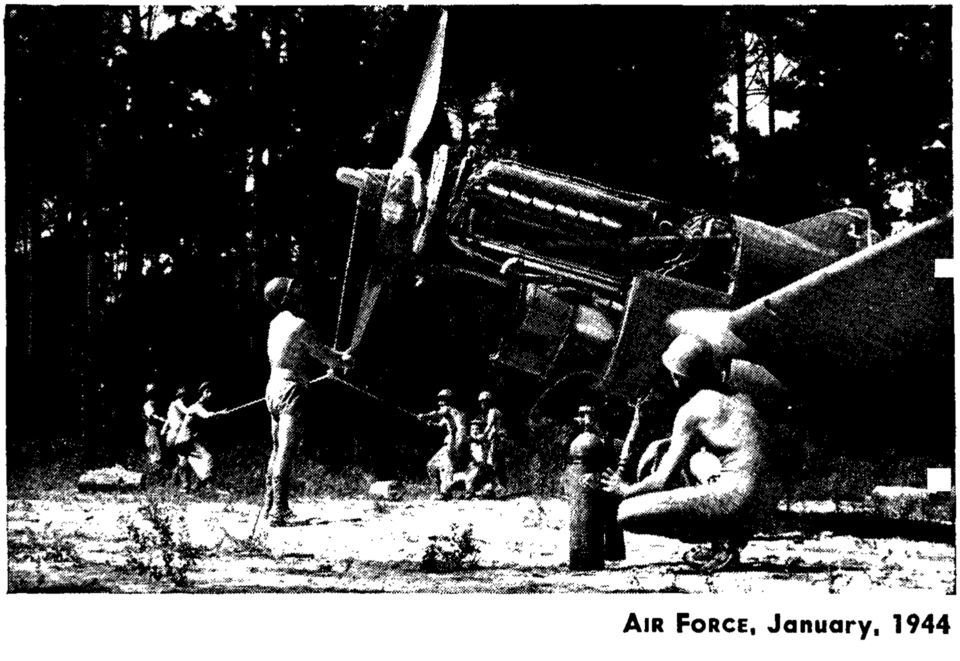
"I guess I found out today how Miko really managed," Kolas replied. "How all the good boys managed to keep us flying, come hell or high water. Bartczak had it. It's the Daniel Boone in them. And you fellows are doing a fine job of bringing the old boy to life in mechanics. This training here will probably be worth several months of actual experience to them."

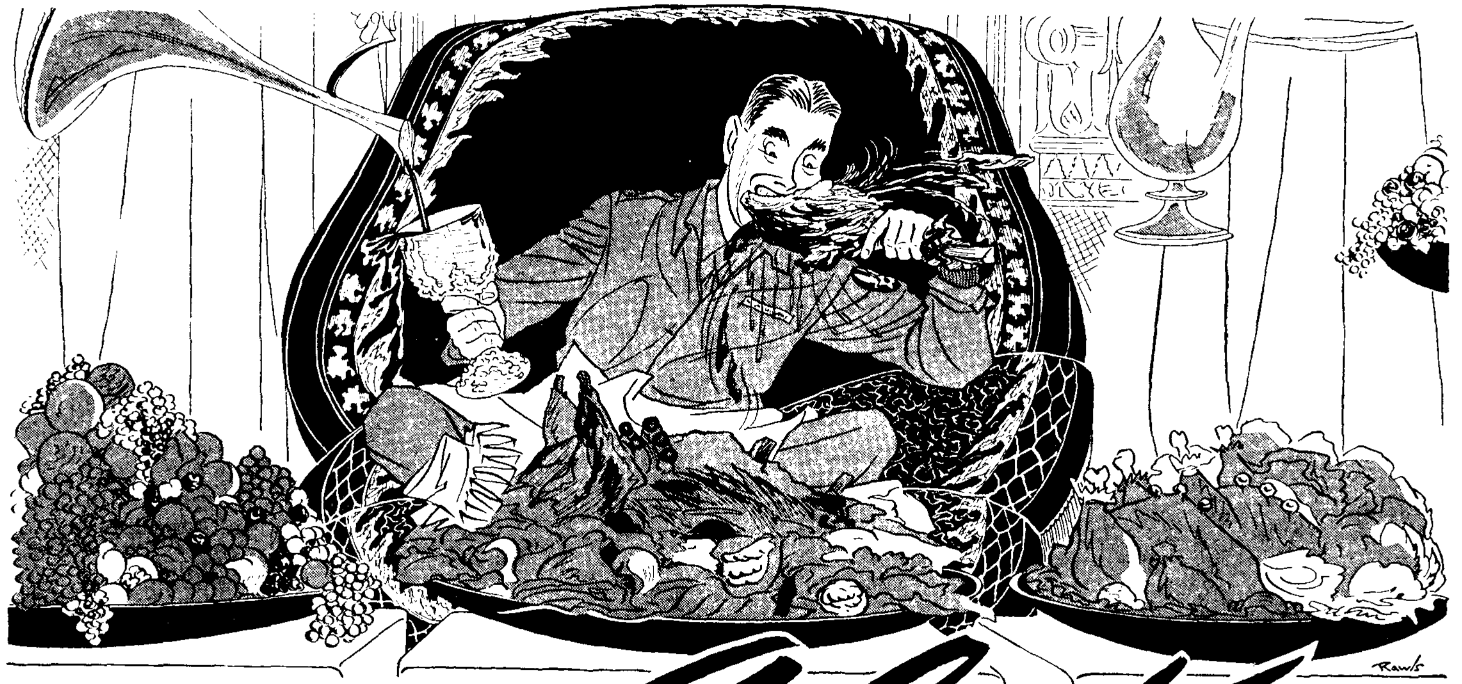
"The snakes ought to be worth two weeks alone," Wells said.

"Halt!" came the guard's voice.

"You can't be too careful," Kolas said quietly. "One night on Guadalcanal the guard challenged and the other guy said, 'Got a match, please!' So the guard shot him dead. He wasn't following the rules. Turned out the guy was a Jap." ☆

Gulfport Field students get practice in using bungee or shock cord starter. Man in foreground is ready with CO_2 in case of induction fire.





SURVIVAL *a la King*

By MAJ. GEORGE W. HUMBREHT

Operations Officer of a North African Photo-Reconnaissance Group

This pilot proved a forced landing can be something more than sweat, snakes and short rations—if you're lucky.

I GUESS I could lay claim to the most luxurious forced landing in aviation history. All of us have heard the inspiring accounts of airmen who crashed their planes in tangled jungles and then slashed their way back to civilization. Many of us know flyers who were forced down behind enemy lines and who later rejoined their squadrons. Hunger, thirst and all the elements of nature have conspired to defeat our grounded air companions, but it was left for me to bring up the other extreme.

It was on the afternoon of December 29, 1942, that I failed to return from a mission, and no one at my home field could have imagined the carefree life I was leading while they, so they assure me, feared the worst and hoped for the best.

That morning I had taken off for Sousse, flying over water just off the coast, encountering cloud banks most of the time at about 8,000 feet. It was very cold and the ship began icing up fast. Within a short time ice formed completely over the canopy and I was unable to see outside the cockpit. Suddenly I must have run into a cumulus cloud because the ship went into a dive and hit 675 mph before I was able to pull her out. After the dive I saw clear patches up ahead and climbed to 18,000 feet into the clear. I could see Sardinia about forty miles away, so I set course for Sousse. Everything went fine until I was near Tunis where my right engine quit. By that time it was overcast everywhere. Although the territory below me has long since been in Allied hands, at that time it was enemy territory and I gave it proper respect. To get around the weather I had a choice of going north over the sea or south over the desert. As for getting back to my field flying blind, I figured my chance was about one in a hundred. I headed south.

After flying through 150 miles of broken clouds, I came around the edge of an overcast with the ship holding nicely at 10,000 feet. I flew due west without seeing a sign of life. Shortly before noon, when I figured I was somewhere south of Phillipeville and Algiers and pretty well out over the Sahara, I circled a little village but it seemed completely deserted and I continued westward. At 11:30 I began to worry about running into Spanish Morocco and decided to swing around and retrace my course.

Flying back, I came over the deserted village again and saw a white dome with some houses around it about five miles farther on, a truck moving along a road toward them. I was wondering whether the natives would be hostile, as they were at first on the coast, but there wasn't much choice so I came down alongside the road. The right wheel and rudder hit a hummock, there was a loud report and the cockpit filled with smoke. I was plenty scared until I realized it was the little crash bomb in the radio that automatically wrecks it when a plane is forced down. I got out and examined the ship. The right rudder was slightly bent and a camera window broken; otherwise everything was OK.

I waved to an approaching Arab and he waved back. I immediately thought of the blue card we always carry for such emergencies. On it was printed, in Arabic and English, the following message:

"To all Arab peoples greetings and peace be unto you. The bearer of this letter is a soldier of the United States Government and a friend of all Arabs. Treat him well, guard him from harm, give him food and drink, help him return to the nearest American or British soldiers and you will be liberally rewarded. Peace and the mercy of God be with you. (Signed) Franklin D. Roosevelt, President of the United States of America."

I handed this to the Arab, but he appeared to be unconvinced. I kept saying "American," but it didn't register. By

Illustrated by James T. Rawls

this time Arabs were approaching in streams, jabbering in Arabic, and looking at me dubiously. The word "American" didn't seem to strike a light anywhere.

Then I heard one say "New York?" Well, I'm from St. Louis, myself, but that was close enough to home under the circumstances, so I nodded vigorously and exclaimed, "New York! New York!"

After that everything was fine. They took me into the village and to the building with the white dome. By that time I had begun to feel that everything was all right, but I wasn't prepared for what I saw. The interior of the building was beautiful. There were rich Oriental rugs, big mirrors and paintings on the wall, elaborate carvings of all kinds, and a big leopard skin. It was all very colorful and rich. There were two chairs and a great many cushions, and in the middle of the room stood a table which seemed to be particularly revered. On it was a large book and I approached it with proper respect. The Arabs indicated that I should look at the book, which turned out to be an album of picture post cards of Paris. I later learned that the house had been occupied by a Sultan and his French wife until her death in 1935. Since then it had been kept just as it was during her life there. A ukulele and a sombrero were still hanging in a corner.

I sat down on one of the chairs, and some food was brought in. Naturally, I had heard about many African diseases and I didn't know what the food would taste like, although I was anxious not to offend the Arabs. I sipped some tea and it was delicious. It had a peppermint flavor. Their cookies likewise were excellent. I began to trust Arab food.

After these refreshments I wanted to get back to the plane to see if I could locate the trouble in the right engine. By much sign language and by sketching a plane on a piece of paper I put over the idea. Accompanied by the entire party I returned to my plane. When I opened up the tool locker I found nothing but a can of canopy polish. This was irritating. The day before I had looked into every ship on the field for canopy polish and had found nothing but tools.

At that point a car drove up and a note was delivered to me. It read: "To the American Officer—Be so kind to come with my car to Ainemahdi. We are expecting you for lunch. (Signed) V. Broh, Lieut. Col."

Lieutenant Colonel Broh turned out to be a French administrator in that district and fortunately spoke English quite well. The first thing he told me was that I had been very lucky to come on this particular day, since he came there but three times a year. Colonel Broh was staying with a Sultan named Sidi Ben Ameni Ben Sidi Mohamed El Kebir Tidjani, an important chieftain in that area. Sultan Sidi expressed no surprise whatever at my unexpected arrival, explaining that it had all been predicted many years ago that I would appear on this day.

By this time it was two o'clock in the afternoon and I was quite ready for dinner—but not for such a dinner as was served. Before me were two glasses, one filled with red wine and the other with white wine, and immediately behind me were two waiters with bottles. When I lowered the level of either glass by so much as a sip, it was immediately replenished. Then the dinner began. First came four fried eggs, followed by soup. Then steak and fried potatoes. This gave way to another platter full of steak and a very tasty dressing. The next offering was kush-kush, a delicious food made of pork, which is practically the Arab national dish. Kush-kush is a sort of ground meat, very light in color and I was timid about eating it since I was already rather full. However, my host insisted that I try it and he gave me an enormous helping. I tasted it and found kush-kush so good that I polished it off without hesitation. We rounded out our meal with oranges and tangerines, cakes which resembled cream puffs, dates and sponge cake.

We then moved away from the table and entered another room where we were served coffee and more cakes. I was asked how many lumps of sugar I wanted and I said one. After that, no matter where I went, the information preceded me that I took one lump of sugar with my coffee. No one else needed to ask.

Colonel Broh dispatched some French soldiers to guard the plane, and then we took leave of the Sultan in order to drive on to Laghouat, where there was a French airbase and some skilled mechanics. By this time it was quite late and I was treated to a desert sunset. I have never seen such intense colors; the reflection on the hills of sand was as red as flame. Colonel Broh then told me that I had landed on just the right spot. On either side of us was a range of mountains, and had I come down on either of the other sides it would have taken ten days of walking to reach the nearest habitation. Not only that, I had happened on the only telephone line running to this part of the desert.

Laghouat is practically a tourist resort right in the middle of arid desert; indeed, a luxurious oasis. We were met there by a high civilian official who took us to another elaborate dinner of fried chicken. By this time I began to realize that everything was being planned. I was given two interpreters who stayed with me in shifts, and provided with a car and chauffeur for the duration of my visit.

After this dinner I was rather tired and my hosts, reading my mind, whisked me away to a hotel as sumptuous as anything one could find in New York City. I was shown to a big room with twin beds, and two tall French windows which led to a balcony overlooking a garden of orange, lemon, palm and grapefruit trees. There was a special pillow for support while reading, an enormous affair and extremely comfortable. I left a call for seven o'clock and sank down into two soft mattresses . . . oh luxury . . . and so to sleep.

Promptly at seven a servant tapped on the door, and entered with my breakfast on a tray. Propping myself on pillows, I sipped the coffee and ate with majestic leisure. I had called for my car at 7:45 and felt somewhat let down when it arrived a minute late. At that point, I think, I was becoming a little spoiled.

I went to the telegraph office and called the field. They told me the ceiling was still zero and for me to stay right where I was, something I was perfectly willing to do. Then we picked up the French mechanics and drove the fifteen miles out to the ship. Sitting around the plane in a large circle were several hundred Arabs, and others were continually arriving from every direction. I remembered how my preference for one lump of sugar had spread so I knew how word of the plane had reached these Arabs.

The mechanics, the interpreter and I went to work on the plane. I told the interpreter to ask the mechanics to open the side of the right motor nacelle, which he did. The mechanics got the nacelle off and then started to take the entire wing apart. At that point I had a hell of a time stopping them, because the interpreter had wandered off somewhere. The actual trouble was very simple; a thumb screw had slipped off a clamp on a hose connection, and pressure had forced the hose loose. We had it fixed in a minute.

After this chore was done I was taken back to Sultan Sidi's palace at Ainemahdi where a big chicken dinner and a great deal of wine was waiting. The altitude at this spot is about 3,000 feet above sea level, and at that time of the year it is definitely chilly.

Fire wood was quite scarce and most people seemed unable to do much about it except shiver, but every time I entered a room an attendant touched off a fire. It was such attentions that made me feel like a king.

After dinner, I went back to the field to take the plane over to the French field at Laghouat. Arabs were still coming on from the desert and I was asked to buzz them as a gesture of good fellowship. I took off, swung around, and opened up wide in a shallow dive. The Arabs were really a sight. They didn't know which way to run so they just scattered like leaves in a whirlwind. After that it took but a minute to arrive over Laghouat. When I put in there, I was told that General Bone of the French Army had arrived, and would I be so kind as to buzz the field. I would naturally. I took off, came back in a steep dive, then hung her on the props and concluded with a few other mild antics.

When I got out of the plane I was informed that I was to be a dinner guest that evening of an Arab reported to be the richest man in the desert. I also learned that General Bone and Colonel Broh were to be members of the party. The dinner was at eight o'clock, giving me just enough time to get hungry. Along with some other guests, I approached the Arab's house through a garden which I was told was very beautiful. It was too dark to see the garden but there was a string of lights along the path, and these turned out to be Arabs holding very large and elaborate old lanterns. The lantern-bearers kept running ahead to form again, and lighted our way right up to the door.

When I walked in I was so awe-struck that I almost backed right out again. The house was beautiful beyond description. There were tapestries on the walls; deep rugs on the floor; tables and chairs carved and inlaid with rare woods; everywhere were glowing colors which got all mixed up in my eyes and made me dizzy.

We were greeted by the host, a richly dressed old Arab who invited us to be seated around a fire, where we were served immediately with mint tea. Then we moved into the dining room.

We were served a meat dish which was like hamburger wrapped in a pastry crust. It was perfect, of course, as were the steak and fried potatoes, pork with spice-flavored beans, and the ever present kush-kush. When we had eaten this, everyone left the table, much to my surprise and disappointment.

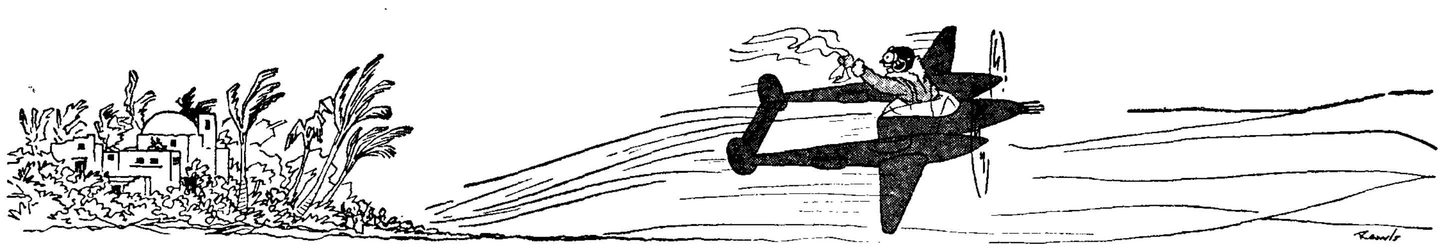
"Well," I thought to myself, "This isn't so hot." Please understand that by now I was really spoiled! As I stood nursing my disappointment, two servants entered carrying a platter about four feet long, on which was a whole roasted lamb. This was placed on a side table and the guests gathered around it, each pointing out the part he wanted. One could have spare ribs, leg of lamb, lamb chop, any portion desired. My host graciously offered me an eye of the lamb, a great honor, since it is considered a rare delicacy by the Arabs. Despite the honor I didn't think I could quite go an eye and pointed out a more appealing choice. After devouring the lamb we were served fruit, cream puffs and a lovely light golden cake. Later, as was the custom, we had coffee and more cakes in an adjoining room. Of course, wine had flown freely all the while and I went back to my hotel about as solid as I have ever been.

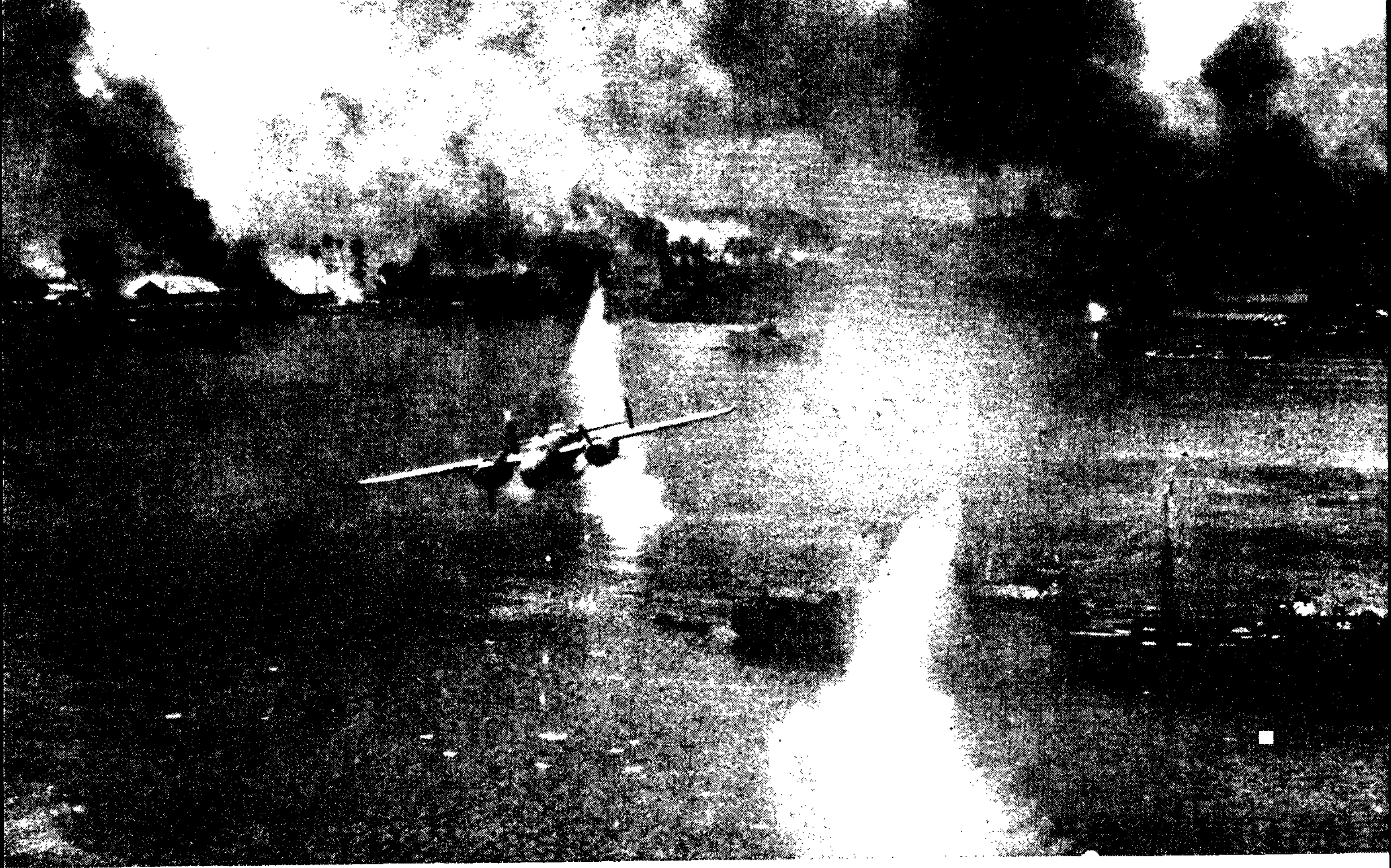
Next morning I called the home field and found they were still under bad weather. I went out to check the plane and was told that I would have lunch with a major. Certainly coming down in rank now, I figured, for by now I was disgustingly spoiled. However, the dinner consisted of wild antelope, a real treat. It was something like very tender steak, except that it had a wild tangy taste.

I spent the afternoon browsing through the shops of Laghouat and bought a beautifully ornamented sword which had been used in defense of the town in 1859. In another shop I saw thick rugs made of camel's hair, gorgeous things and so inexpensive that I would have bought one then and there if I could have stowed it into the plane. I returned to my hotel thinking I had seen everything in Arabian entertainment, only to be reminded that it was New Year's Eve and a little celebration was in store.

First, I was taken to a rather interesting play which was followed by beautiful choral singing. Then at 11:45 I was whisked away to a midnight supper I shall never forget. At the stroke of midnight a number of French officers stood a toast with me to Victory, and then we sat down to a feast of fried chicken and wine. Torrents of wine seemed to be flowing everywhere. Many of my companions, I learned, had slipped out of France and gone to Tunis when they heard of our forces arriving in Africa. They had been without the materiel to hold off the Germans sweeping up from the south, however, so they had moved back and come down here. Some had brought their wives who were very beautiful and extremely chic. They made me play some kind of complicated game in which you drink one finger of wine and then do all sorts of things in sequence; then two fingers of wine and do the same sequence —and when you miss something, as you always do, you must begin all over again.

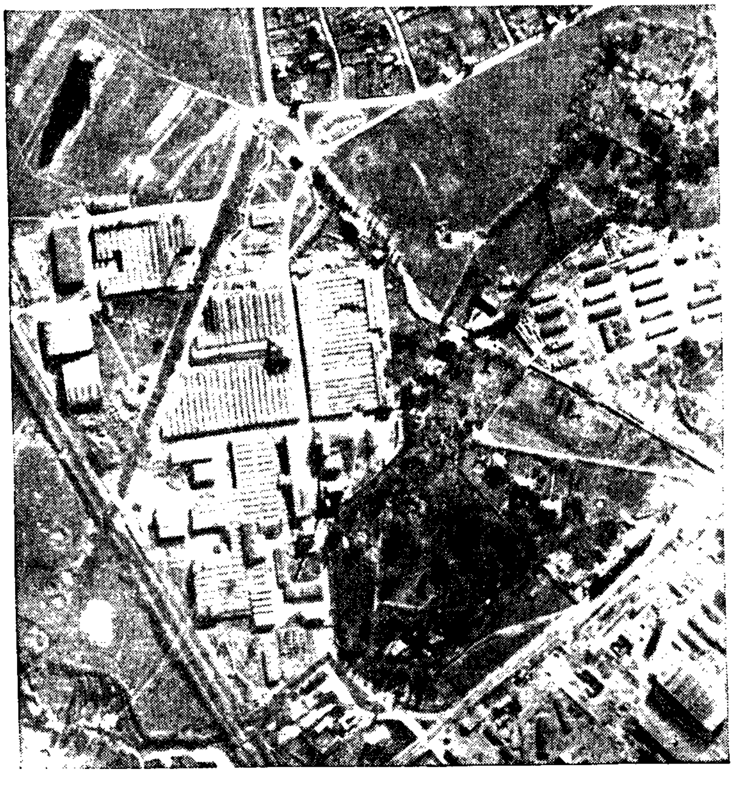
The next morning, like a good omen for the New Year, the weather was bright and clear, and on the phone I learned it was the same way at the other end. By that time every one was down at the field, and there were many fond "au revoirs" before I finally closed down the hatch, taxied out and took off. ☆



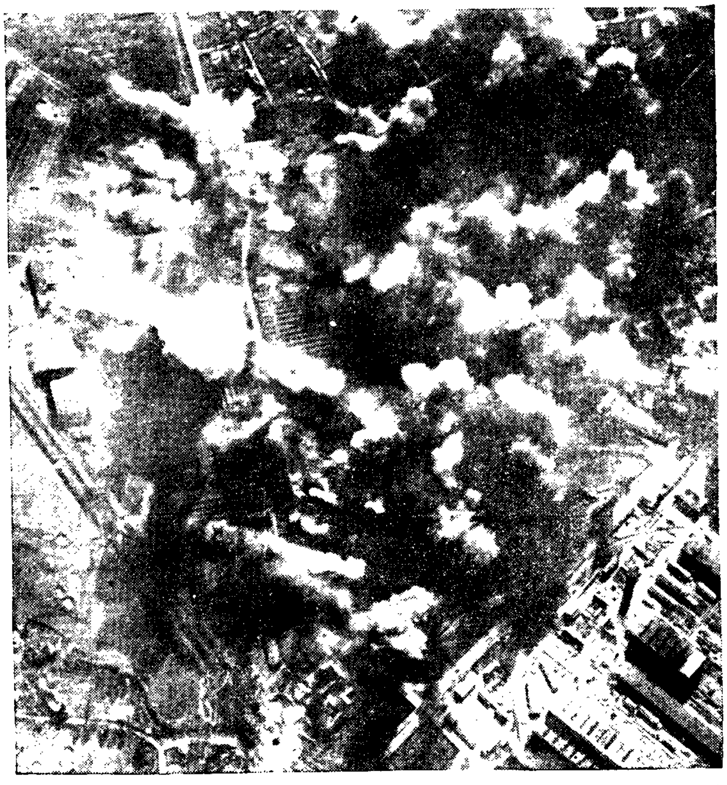


Attacking B-25s leave the Jap base at Rabaul, New Britain, in flames. The white plume in the center foreground is a water spout from a bomb burst outside the camera's range. The Japanese cargo vessel which escaped the pictured bomb burst was later left burning in the harbor.

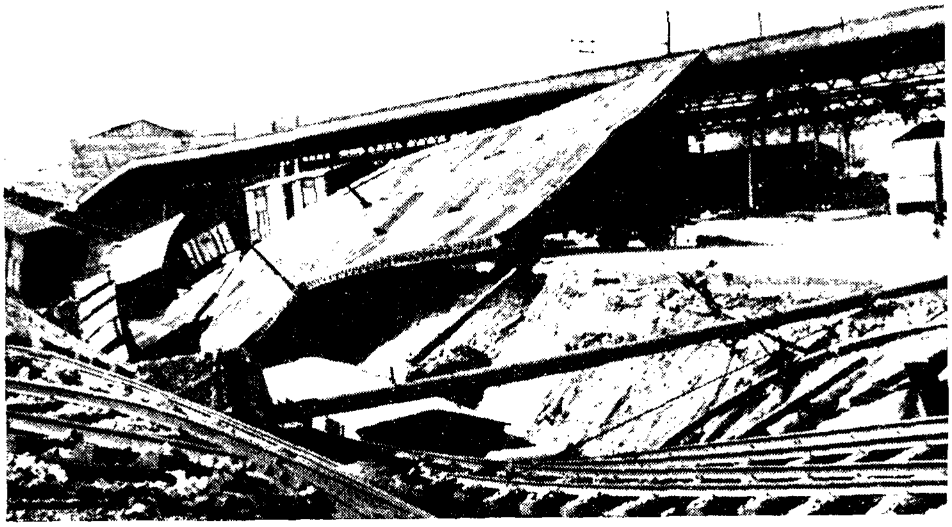
Allied occupation of the lower end of the Italian boot has afforded our heavy bombers airfields which are much closer to vital enemy industrial centers in southern Europe. This is the Messerschmitt aircraft works near Vienna before the bombs began to fall on Nov. 2.



A few moments later as the bombs landed, this is how the Weiner-Neustadt plant appeared from the attacking B-17s. Later reconnaissance photos showed that damage to the important center was extensive. The target is only 550 miles northeast of Naples.

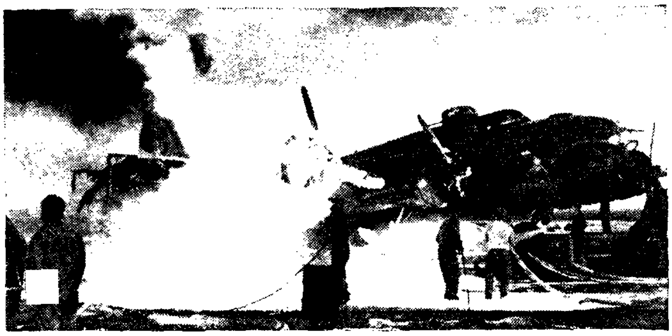


BOMBERS AROUND THE WORLD



Allied forces had this mess to clean up when they occupied Naples, but they had the satisfaction of knowing that our bombs did the damage in the earlier stages of the Italian campaign when the destruction of enemy communication lines was an absolute necessity.

Fire spread suddenly over the No. 4 engine of this B-17 while the carburetor was being tested at a bomber base of the 8th Air Force somewhere in England. Fire apparatus responded to an emergency alarm.



Mechanics and fire crews fought the flames for an hour despite a 3,000-pound bomb load in the plane, which had been called back from an operational flight due to bad weather. While the fire raged, ground personnel risked their lives to remove other B-17s from the proximity of the blaze. Flames burned off the wing and lapped near the bomb bay.

Unable to control the fire the men abandoned the blazing plane before the bomb load exploded. This photo was snapped a few seconds after the explosion. No personnel were injured and no other property was damaged, a happy contrast to similar mishaps which have claimed many lives and scores of planes.

THE PRINCIPLES OF WAR

By Brig. Gen. Ralph F. Stearley

COMMANDING GENERAL, I TACTICAL AIR DIVISION

It is the desire of every officer to learn more about his profession in order that he may become a better soldier.

In the ordinary affairs of life, we base our actions consciously or unconsciously on experience. If we have no experience of our own, we use that of others. History is the record of this experience. Military history is the bible of the soldier.

The military profession is the oldest and greatest profession. The fame of great military leaders outshines that of all others. One man, known throughout the world, who recently died, directed that there be placed on his tombstone the following: "Theodore Roosevelt:— Soldier; Statesman; Scholar." There was no doubt in his mind which attainment should come first.

The study of military history presents certain ideas which have guided all military commanders of the past. Success or failure in military operations has always depended upon the extent and manner of their application. From their general character has been formulated a doctrine for our conduct of war.

Although the history of war in the air does not have the prestige of age, it has taught us lessons which will stand the test of time and which no air officer can neglect.

There are nine fundamental principles of war. These principles are:

- **The principle of Cooperation.**
- **The principle of the Objective.**
- **The principle of the Offensive.**
- **The principle of Mass.**
- **The principle of Movement.**
- **The principle of Economy of Force.**
- **The principle of Surprise.**
- **The principle of Security.**
- **The principle of Simplicity.**

All good soldiers should remember these principles and be guided by them. An easy way to remember these principles or to call them quickly to mind is to remember the word, "COMES," or better still "CO^{2}M^{2}ES^3."

C —	Cooperation
O^2—(O squared)	Objective Offensive
M^2—(M squared)	Mass Movement
E —	Economy of Force
S^3—(To the third power)	Surprise Security Simplicity

There follows a brief discussion of each of the nine principles of war, with some emphasis placed on their application to air forces, which, up to this time, has been neglected.

COOPERATION

The full power of force can be exerted only when its parts combine in action. This does not mean that air operations and ground operations must necessarily take place at the same time and in the same vicinity. Air operations almost invariably precede the contact of surface forces. The orderly mobilization and strategic concentration of the field forces and their ability to advance depends in a large measure on the success of early air operations.

OBJECTIVE

The purpose of military operations is the attainment of the objective assigned. The selection of a national objective depends upon political, military and economic conditions.

The first objective is the neutralization or destruction of the power of the opposing military forces to give battle. In the past this has usually implied the defeat of the enemy's main forces as decisively as the military means available would permit. Now, the economic structure of a nation may be the primary objective. The enemy's airplane factories, his refineries or other manufacturing facilities may be the key objectives. The gaining of air superiority is the first requirement of any major operation.

OFFENSIVE

The advantages of the offensive are primarily that the initiative will generally be secured and that surprise will be facilitated. The fact that offensive operations are undertaken, both by air forces and ground forces, will show that the nation is not afraid of its adversaries and this will react favorably on the troops and our civilian population will have no fear of invasion.

Only by offensive action may the initiative be retained and a definite plan followed. The cooperation of all available forces can be secured. The uncertainty of waiting on the enemy's movements can be avoided.

Offensive action is the only means by which a decision is gained. When successful, the offensive brings victory while the defensive can only avoid defeat. The offensive increases the effectiveness of a force adopting it, since it raises morale, permits a concentration of effort and allows freedom of action.

MASS

Mass is the concentration of combat power. Combat power consists in numbers, weapons, tactical skill, fighting ability, resolution, discipline, morale and leadership.

The largest possible combat power should be concentrated in the area where it can inflict the greatest harm on the enemy, where success is most probable and where success will bring the greatest advantage.

The greatest risk lies in reducing combat power of the force allotted to an operation by detachments. Success in the main operation will more than compensate for small defeats elsewhere. It is obvious that the larger the combat power employed in the main operation in proportion to that at the disposal of the enemy, the greater will be the chances of success. The inherent flexibility of air power is its greatest asset. This flexibility makes it possible to employ the whole weight of the available air power against selected areas in turn; this concentrated use of the air striking force is a battle-winning factor of the first importance. The parcelling out of small units of air power to various commands violates the principle of Mass.

MOVEMENT

The term "movement," as here employed, means the maneuver of combat elements. This applies to air units as well as to ground force units. In the offensive this principle is used to bring Mass to close grips with the enemy in order to secure decisive results. The flexibility of air power makes it possible to mass that power in selected areas. Air bases add to the mobility of air forces. The advance of ground troops often makes available new airdromes needed by the air force.

ECONOMY OF FORCE

In order to insure the concentration of combat power, the greatest economy of this power must be practiced in carrying out secondary missions. This allows the Mass to be employed in the main effort. The flexibility of air forces and the defensive power of fighter aviation will allow secondary missions to be carried out with the minimum expenditure of forces.

SURPRISE

Surprise is the most deadly of all weapons. The great commander is vitally concerned with the problem of bringing it about. When forces are surprised their emotions and not their intellect are in control. Their minds become confused, and they are very liable to error.

Surprise is effected by doing the unexpected and thereby creating a situation for which the enemy is unprepared. Surprise can be secured by concealing preparation, by disguising the intention, by the use of new aircraft or the novel use of existing equipment, or by the rapidity of execution. In most cases where surprise by air units is attempted, it should be accompanied by timely offensive action of ground troops. Surprise may take the form of time, place, direction, force or tactics. If a commander secures surprise but is not prepared to follow up his advantage in an effective manner, the results will be disastrous because hesitation and doubt will infect his forces.

The application of the principle of security insures freedom of action. The information secured by reconnaissance aviation and by the aircraft warning service of hostile air activities is an invaluable guard against surprise.

Active air defense comprises all measures aimed to destroy or threaten destruction of hostile aircraft and their crews in the air. This defense will guard against surprise. Active air defense is provided by fighter aviation, anti-aircraft artillery and small arms fire, and by obstructions, principally barrage balloons.

Passive air defense is provided by dispersions, camouflage, black-out and other measures which minimize the effect of hostile air attack.

Security against hostile air attack is best attained by vigorous counter air force operations. The retention of the initiative is the most effective means of insuring security.

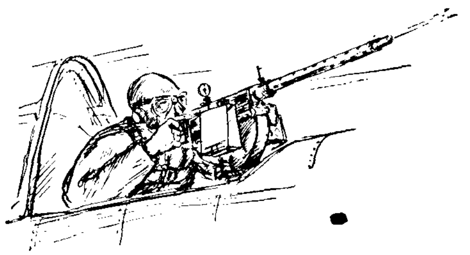
SIMPLICITY

Simplicity is a relative term. Military plans should be simple, and orders should be direct and free from possible misinterpretation. Frequent changes of plans are to be avoided, and unity of command must be observed.

War to be successful must be conducted according to certain common sense principles. The nine principles of war listed comprise the whole of the art of war. Their application to the preparation for war, and the direction of war, is called *strategy*. Their application to specific operations is called *tactics*.

In war we deal in concrete cases. For this reason, the principles of war can serve only as sort of a general guide. Each campaign and each operation must be thought out and analyzed in all its parts. Out of this analysis should come the correct decision. Whether the air officer be in a fighter action or in an attack on a hostile airdrome from low altitude, the principles of war, modified to the situation, apply.

These principles are few and may be learned in a short time, but a whole lifetime can be spent in the study of their application without exhausting the possibilities of the art of war. ☆



GREASING MACHINE GUN SUPPLY LINES

By Col. Clyde H. Morgan

CHIEF, ORDNANCE AIRCRAFT SERVICE, MATERIEL COMMAND

THERE is mighty little hilarity in the service of supply. For verification ask any harassed sergeant dealing out boots, tent pegs or newly degreased guns in a low, frame shack on a sweltering day.

But humor, like gold, is where you find it and even supply can have its diverting moments. Thus, at one of our large depots in the ante-bellum days an urgent requirement arose for a substantial quantity of antifreeze mixture technically called Prestone. Inadvertently the purchase order designated Freezone, that well-advertised corn remover which is sparingly applied drop by drop. Exemplifying American production genius, the factory promptly went on a three-shift basis and made adequate plans for expansion.

Fortunately, the mistake was corrected when the firm's curiosity and solicitude led to an inquiry "if the whole army suffered from corns."

When World War II broke upon a startled America at Pearl Harbor, the supply of aircraft weapons became most acute. It was imperative that every available fighting ship be placed in immediate combat trim, and these ships had a disconcerting trait of popping up at strange places shorn of armament originally installed.

With admirable foresight, production had been shifted to place full emphasis on the caliber .50 machine gun as the basic weapon of the Army Air Forces, but the pre-empting of many British planes due to the emergency created an unexpected requirement for caliber .30 machine guns to take the place of British .303 guns which were installed in the United Kingdom. Consequently, for the first few trying months of 1942 all caliber .30 guns were rounded up and carefully dealt out one by one as the urgency and priority demanded.

The supply of machine guns and cannon to aircraft plants was evolved by an orderly process through three successive stages, the first of these being the *controlled* item basis which obtained through the first six months of war. The first step met the exigencies of the moment by placing in a single agency of the Air Staff the power to distribute the weapons in accordance with the determined priority. On the other hand, it proved inflexible, placing supply details on personnel already burdened with the problem of directing the war.

After six months, however, production lines began to roll and a credit system was placed in effect whereby an allotment of guns was placed to the *credit* of the Air Forces in the various supply depots. Based on this credit authorization the Materiel Command was able to direct immediate shipments from the most convenient Ordnance depot direct to aircraft plants in the vicinity.

The credit system worked very well, but as the magnitude of supply attained a rate of half a million guns or cannons a year, further improvements and economies became apparent. For example, guns were still being shipped to aircraft plants packed in heavy cosmoline that required disassembly and costly degreasing prior to assembly. Although competent Ordnance armorers were stationed at each aircraft plant, the guns when finally installed were not in the same condition as they were when they left the assembly line. Consequently, an objective was set up to get the guns installed in the same precise condition they left the inspection line of the manufacturer. One important change was the direct route from plant to plane. For example, guns made in a certain city had been shipped to a distant Ordnance depot *where* they were unloaded, checked, then reshipped to an aircraft plant which was located in the same city where the guns had been manufactured.

The development of Saran packed guns (sealed in a pliofilm), plus the adoption of advanced lubricants and preservatives, provided a basis for supply of guns direct to aircraft plants without packaging in heavy grease.

On August 1, 1943, a new method of *automatic* supply was prescribed. This method, incorporating the most accurate and current production estimates, effected shipment of guns with latest improvements directly from the assembly line to the aircraft plants.

It is not to be inferred, however, that the headaches are over or that a Utopian state of automatic gun supply has been achieved. It must be expected that instances will still happen in supply like the Prestone-Freezone affair, and like the case of the gravy dish misunderstanding. This mix-up came about when a supply sergeant requested a gravy boat under the specified Quartermaster name of dredge. Unfortunately the requisition *found* its way into Engineer supply channels and the sergeant was startled at the prompt delivery of an Ohio River dredging barge.

We are jealous of the record that has been maintained to date—of not having delayed a single plane for lack of required weapons. And we are equally determined to maintain the slogan of "Enough and On Time." ☆

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All headquarters shown are located in Washington, D. C., unless otherwise indicated.

November 15, 1943

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*Coleman, Carlyle, Capt.
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Hahn, Delbert H., Lieut. Col. (Also DFC)
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Eason, Hoyt A., Lieut.
Farenhold, William W., Sgt.
Flavelle, Brian W., Lieut.
Gover, Leroy, Capt.
Hannah, William W., Lieut.
Hayden, John H., Col.
Hunter, Frank O'D., Brig. Gen.
Iovine, Guy T., Lieut.
Jacobson, Julius, Lieut.
Johnson, Lewis P., Lieut.
Kessler, Alfred A., Jr., Col.
Komarek, William J., Sgt.
Longfellow, Newton, Brig. Gen.
MacDonald, Donald W., Maj.
McKay, Mack, Maj.
Mabry, John G., Lieut.
Martini, Allen V., Capt. (Also DFC)
Melaun, Joseph C., S/Sgt.
Moore, John G., Col.
Narem, James, T/Sgt. (Also DFC with OLC and AM with OLC)
Odell, Donn C., Lieut.
Paris, George C., Lieut.
Poe, James W., S/Sgt.
Pritchard, Gilbert L., Maj.
Privett, Harry E., Sgt.
Rainey, Leroy A., Lieut. Col.
Richey, B. O., T/Sgt.
Rigley, Orin H., Jr., Lieut. Col. (With OLC, DFC with OLC and AM)
*Sneed, Marshall, Capt. (Also DFC)
Stillman, Robert Morris, Lieut. Col.
Wells, Harold G., Jr., Capt.
Whitehead, Ennis C., Maj. Gen.

PURPLE HEART

Anderson, Samuel H., Lieut. (Also DFC)
Barrett, Charles C., Lieut.
Barry, James N., S/Sgt.
Bourne, Henry C., S/Sgt.
Butterbaugh, Paul A., T/Sgt. (Also AM with 2 OLC)
*Conant, Clarence A., Pvt.
Corl, Hubert E., T/Sgt.
Cowgill, Bernard F., Cpl. (Also AM with OLC)
*Coyne, William, Pvt.
Crump, Arch M., T/Sgt.
Currie, Herman C., Lieut.
Delafield, Dean E., Lieut. (Also OLC to AM)
Fitzpatrick, William N., Sgt.
Fountain, Clark O., Lieut.
Hansen, Richard H., Lieut.
Hicklas, Raymond A., Lieut.
Hilsabeck, Frank H., S/Sgt.
*Hoyt, Clarence E., Pfc.
Hull, William E., S/Sgt.
*Joyner, Theodore K., Pvt.
Keller, Robert E., Sgt.
Kilmer, T. J., S/Sgt.
Kusowski, Thaddeus F., S/Sgt.
McDermott, Mark L., Lieut.
McEachin, Eugene M., Lieut.
Marinis, Harry Y., Sgt.
May, John N., S/Sgt.
May, Sterling J., S/Sgt.
Morrison, Kelly L., S/Sgt.
Muszinski, Raymond, S/Sgt.
*Orr, Willard C., Pfc.
Pabst, Horace F., T/Sgt.
Pappas, James A., Pvt.
Phillips, Phillip P., Lieut.
*Price, George, Pfc.
Ruppe, Eldon T., Lieut.
Satterfield, Richard J., S/Sgt.
*Shields, William F., Pvt.
Stevens, Walter T., Jr., Lieut.
Stroud, William W., S/Sgt.
*Surrells, Leo H., Pvt.
Thorpe, Herbert B., S/Sgt.
Tillery, Otis B., Lieut.
Tillman, Herman G., Lieut.
*Timmerman, William F., Pvt.
*Vanderelli, Maring, Pvt.
*Wardigo, Walter H., Pvt.
Wiley, Eugene M., Lieut.
*Woodworth, Lawton J., Pvt.

DISTINGUISHED FLYING CROSS

Aldridge, Leroy A., Sgt.
Andrews, Dorn R., Sgt.
Arneth, John P., Cpl.
Asch, Alfred, Lieut.
Asher, John G., S/Sgt.
Auman, Rictor H., Lieut.
Backus, Edward N., Col.
Baird, James D., Lieut.
Baity, Ray H., Jr., Sgt.
Baldwin, Irl E., Capt.
Bamforth, Leon L., T/Sgt. (Also AM)
Barnes, Charles G., Sgt.
Beach, William M., T/Sgt.
Beasley, William D., Lieut. (Also AM with 2 OLC)
Behr, Thomas S., Lieut. (Also AM)
Bennett, Alexander S., S/Sgt. (Also AM)
Blakeslee, Donald J. M., Maj.
Boettcher, Wendell D., Lieut.
Bohlen, Dean W., Capt.
Bone, Donald R., Lieut.
Booth, Frank W., S/Sgt.
Bowden, Robert M., Sgt.
Braun, George T., S/Sgt. (Also AM)
Brink, William E., S/Sgt.
Britt, James O., Lieut.
Brodnax, Edward T., Lieut.
Brouhard, Lawrence H., Sgt.
Brown, George R., S/Sgt. (Also AM)
Brown, Paul D., Maj.
Brunnell, George A., S/Sgt. (Also AM)
Bryant, Norman, Lieut. (Also AM with 2 OLC)
Brynan, Julius, T/Sgt.
Buckey, George R., Capt.
Bull, Charles, Lieut. (Also AM)
Bullock, James R., Lieut. (Also AM with 3 OLC)
Bunderson, Mack V., Lieut. (Also AM with 3 OLC)
Burger, John R., Lieut. (Also AM)
Burgin, Barney W., T/Sgt. (Also AM)
Burke, George A., Sgt.
Cain, James W., Lieut. (Also AM)
Carmack, John E., Maj. (Also AM).
Carr, Raymond O., Lieut.
Carroll, John B., Capt.
Caskey, Martin D., Sgt.
Cecchini, Maurice G., S/Sgt.
Cheek, Willis, T/Sgt.
Chism, Henry D., Jr., Lieut. (Also AM)
Clack, Melvin W., Cpl.
Clark, James C., T/Sgt. (Also AM)
Clark, Lawrence R., Sgt.
Clark, Thomas W., Maj.
Clayton, Jackson B., Lieut. (Also AM)
Cleveland, John H., T/Sgt.
Clinton, Carl C., Maj. (Also AM)
Colantoni, William, Lieut.
Cook, John A., S/Sgt. (Also AM)
Corkrum, Uriah F., Lieut.
Coutre, Robert J., S/Sgt.
Cox, Harvey L., T/Sgt.
Cramer, Thomas R., Capt.
Crane, John A., Cpl.
Curl, James G., Capt.
Daigle, Llewellyn C., Lieut. (Also AM)
Danenhauer, George P., T/Sgt.
Dasher, Everett A., T/Sgt.
Deaner, Samuel L., S/Sgt.
Deffner, Theodore P., Lieut. (Also AM)
De Haven, Talbert A., S/Sgt. (Also AM)
Delaney, Jack F., Sgt.
Del Missier, Bruno C., Capt. (Also AM with OLC)
Delmonico, Frank J., S/Sgt. (Also AM)
De Long, Frank W., Capt. (Also AM)
Deniston, Dale R., Lieut.
De Palo, Vincent J., S/Sgt. (Also AM)
Devinney, James F., Lieut.
Digaetano, Joseph, S/Sgt. (Also AM)
Dittler, Donald C., Lieut.
Dobson, Dorsey T., Cpl.
Domino, Joseph S., S/Sgt. (Also AM)
Donnelly, Frank Hugh, Lieut.
Doyle, Jesse L., S/Sgt. (Also AM)
Duckworth, Ernest M., Lieut. (Also AM)
Durbin, Cecil, Lieut.
Dwyer, Lawrence P., Capt. (Also AM with 2 OLC)
Dwyer, William P., Lieut. (Also AM)
Eames, Robert Deming, Lieut.
Eaton, Robert L., Lieut.
Ellington, Edward H., Lieut.
Elliott, William W., Capt.
Espy, Bobby G., S/Sgt.
Fears, James D., Lieut.
Figueroa, Leopoldo, S/Sgt.
Fleenor, Beattie H., Capt.
Formby, Edgar F., Cpl.
Gaitley, Edward D., Capt.
Gardner, James T., Jr., Lieut.
Gavin, Frank W., T/Sgt.
Gerling, Robert J., Lieut.
Gerry, Clark H., Lieut. (With OLC)
Gillespie, James W., Lieut.
Goldstein, Daniel, T/Sgt.
Goldstein, Harry, T/Sgt.
Gordon, Robert J., Cpl.
Gorman, Donald W., T/Sgt.
Gotham, John P., S/Sgt.
Gray, Carl R., S/Sgt.
Gregg, William H., T/Sgt.
Groff, George E., Lieut.
Guider, Clarence H., Jr., S/Sgt.
Haas, Theodore, T/Sgt.
Hall, Benjamin P., T/Sgt.
Hall, Delbert H., Lieut.
Hall, Jesse C., Jr., Lieut.
Hancock, Eddie C., Lieut.
Hansbury, Thomas J., S/Sgt.
Hanson, Robert J., T/Sgt.
Hartburg, Ernest L., S/Sgt.
Harvey, Herbert H., T/Sgt.
Hayden Harry J., Capt.
Heffner, Charles R., Maj.
Hickey, John K., Lieut.
Hickman, James G., Cpl.
Hill, Allen S., S/Sgt.
Hively, Roy J., T/Sgt. (Also AM with OLC)
Hogan, John V., Lieut.
Holloway, Harry, Jr., S/Sgt.
Hubbard, Olan L., Lieut.
*Hughes, Arthur M., Lieut.
Ingram, Donald H., T/Sgt.
Irons, John A., S/Sgt. (Also AM)
Iverson, Kenneth P., Lieut.
Jacobs, John L., Jr., Lieut.
Janacek, Melick J., S/Sgt.
Jansen, George R., Lieut.
Jobe, Fletcher H., Lieut.
Jones, Robert J., Lieut.
Kaboth, Jack W., Lieut.
Kaminski, Harry L., Sgt.
Kelemen, Dennis, T/Sgt.
Kelley, George J., Jr., Lieut.
Kent, Earl C., Lieut.
Kershner, George R., Cpl.
Kirn, Jacob K., T/Sgt.
Klapperich, Henry J., Sgt.
Kleiner, Harvey, Lieut.
Kramer, Robert F., S/Sgt.
Krebs, Oscar R., Lieut.
Laclair, Thomas J., S/Sgt.
Lammers, Robert J., T/Sgt.
Lanzalaca, Nick R., Pvt.
Leftwich, Howard, Sgt.
Leighton, Charles B., Capt.
Lentz, Robert C., Jr., S/Sgt. (Also AM with OLC)
Lipe, Fort W., Lieut.
Loch, Harold P., T/Sgt.
Logan, John B., Sgt. (Also AM)
Long, Lewis E., Jr., Lieut.
Lucewicz, Casimer J., Pfc.
Lundy, James T., Lieut.
Lutz, Willis S., T/Sgt.
MacRae, Robert R., Lieut.
McDaniel, Donald, Capt.
McDonald, Henry G., Capt.
McHugh, Harry K., Lieut.
McLaughlin, Tim O., S/Sgt.
McTague, Hugh O., Lieut. (Also AM)
Maas, Charles F., Capt.
Macks, Morton, Lieut.
Madsen, Parley W., Jr., Lieut.
Mann, Alden T., Lieut.
Merrell, Robert W., Lieut.
Metcalf, Robert L., Lieut.
Mikolowski, Edward C., Lieut. (Also AM)
Miller, Ernest, Lieut.
Milos, Nick P., Lieut.
Misner, Robert, Capt.
Moncrief, Elvin G., M/Sgt. (Also AM)
Monfort, Joseph F., T/Sgt.
Moore, Raymond T., T/Sgt.
Morgan, Robert K., Capt.
Murphy, John H., Capt. (With OLC)
Murray, Joseph P., Lieut.
O'Neill, Oscard D., Capt.
Ott, Lawrence R., Lieut.
Paulman, William K., Pfc.
Perez, Joseph T., Cpl.
Phillips, Alvin S., Cpl.
Phillips, Chester L., Capt.
Pinkard, Reginald C., Lieut.
Potter, John T., T/Sgt.
Putzman, John E., S/Sgt. (With OLC)
Pyles, Charles J., S/Sgt.
Reecher, Kenneth A., Lieut.
Regan, John M., Capt.
*Reidelberger, Paul J., Lieut.
Reinhardt, Walter A., Sgt. (With OLC)
Remmell, Eugene J., T/Sgt.
Richman, Sidney Monas, Capt.
Rodriguez, James E., T/Sgt.
Rogers, Eugene M., Lieut.
Roth, Arthur J., Lieut.
Roudebush, Barrett A., S/Sgt.
Rowland, Conrad A., Lieut.
Russell, Allen G., Maj.
Russell, William K., Lieut.
Ryan, John C., Lieut.
Saltsman, Ralph H., Jr., Maj.
Sanders, Joseph C. H., Lieut.
Sanders, Richard C., Col. (With OLC)
Santoro, Anthony L., T/Sgt.
Santoro, Leonard V., Capt.
Sauer, Rudy L., S/Sgt.
Saunders, Robert A., Capt.
Sawicke, Nicholas M., T/Sgt.
Schleeh, Russell E., Capt.
Schnorr, Richard F., Sgt.
Seeley, Harvey M., Lieut.
Sellars, Fred J., Lieut.
Sexton, Robert L., W/O
Shiffermiller, William E., S/Sgt.
Shirley, Loyd A., Lieut.
Simons, Raymond L., T/Sgt.
Skelley, Edgar R., Lieut. (Also AM)
Small, Harmon L., S/Sgt.
Smith, Brandon C., Lieut.
Smith, Robert H., S/Sgt. (Also AM with OLC)
Smith, Robert W., Capt. (With OLC)
Smith, Roy Q., T/Sgt.
Smith, Seaborn F., T/Sgt.
Solitunik, Robert J., Capt.
Sommer, George A., T/Sgt.
Stephens, Leonard J., S/Sgt.
Stewart, Jack W., Lieut.
Strickland, Joseph M., Capt.
Symons, Lowell E., M/Sgt. (Also AM)
Thompson, Roy C., T/Sgt.
Vonk, William J., Cpl.
Wachs, Vincent F., S/Sgt.
Waits, Oscar L., T/Sgt.
Wallick, Kenneth K., Capt.
Weaver, James W., S/Sgt.
Webb, Clarence R., Jr., Capt.
Webb, Louis A., T/Sgt.
Weller, Russell K., Lieut.
Wendoloski, Chester T., T/Sgt.
West, Leonard A., Lieut.
Whittaker, Roy E., Lieut.
Wiebalk, Herman D., T/Sgt.
Wiggins, Harry A., Jr., Sgt.
Williams, Gordon L., Lieut.
Williams, James R., T/Sgt.
Witherspoon, Walter C., Lieut.
Witt, Macon B., S/Sgt.
Woodruff, Raymond W., S/Sgt.
Wright, Lowell, S/Sgt.
Wyatt, Kenneth C., S/Sgt.
Wyly, Glen R., S/Sgt. (Also OLC to AM)
Yakimovicz, Frank G., T/Sgt.
Young, John S., Lieut.
Youree, Previs E., Capt. (With OLC)
Zehrer, Carl J., T/Sgt.

OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Crouchley, Edward A., Capt. (Also AM)
Richardson, Arthur L., T/Sgt. (Also AM)
Ronig, Eugene A., Maj.
Snyder, Vincent L., Capt. (Also AM)

SOLDIER'S MEDAL

Andrews, Lee A., T/Sgt.
Bachetti, Leonard J., S/Sgt.
Biesecker, Jay Mc., S/Sgt.
Bongyor, Kalman P., Sgt.
Bradley, James R., Cpl.
Crandall, George B., S/Sgt.
Dickson, William G., S/Sgt.
Donohue, Patrick J., Sgt.
Ferguson, Brainard B., T/Sgt.
Franz, Robert B., Cpl.

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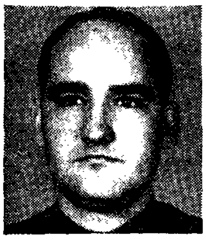
* Posthumous
† Air Carrier Contract Personnel, ATC

T/Sgt. James Narem


Lt. John H. Chalmers

Capt. R. G. Darelius

Lt. Henry D. Chism

Maj. Joseph A. Thomas

Lt. W. M. Riddle

Gaffney, John P., Jr., Sgt.
Herman, Clifford E., Pfc.
Holland, Wilbert H., S/Sgt.
*Jett, Edsel A., T/Sgt.
McAbee, George R., Sgt.
Oropeza, Frank R., Pvt.
Palmer, William W., Sgt.
Palmieri, Carmen, Pfc.
Raffett, Edwin P., S/Sgt.
Rogers, Leslie J., S/Sgt.
Sacks, Fred A., Pfc.
Scutellaro, Louis V., Cpl.
Vecchio, Pete, Cpl.
Young, Clifford R., Cpl.

AIR MEDAL

Adams, John E., S/Sgt.
Adams, Louis C., Jr., Maj.
Adler, Paul, S/Sgt.
Allard, John Stetson, Col.
Allen, Homer R., Lieut.
Anderson, John W., S/Sgt.
Andrews, Thomas E., Sgt. (With 3 OLC)
Arnold, Colin, Pfc.
Arkin, Sanford L., Lieut. (With 2 OLC)
Atkinson, Clifford J., S/Sgt. (With OLC)
Babik, Leo P., Sgt. (With OLC)
Bacon, William C., Capt.
Baker, Giblert P., S/Sgt.
Baker, William E., S/Sgt.
Baldwin, James W., Lieut.
Bales, Ross C., Lieut.
Balsley, Lucius M., S/Sgt. *(With OLC)
Baltes, John L., Sgt.
Bamber, Joyce J., Lieut.
Baroni, Pascal, Sgt.
Barr, James C., Capt.
Barraclough, Robert A., Lieut.
Barrett, Fred, S/Sgt.
Barrier, Jack, Pvt. (With OLC)
Baxley, Edwin L., Lieut.
Bean, Henry R., Sgt.
†Beard, M. G., ATC
Beardshear, Orin W., S/Sgt. (With OLC)
Beary, Kermit E., Lieut.
Beatty, John Henry, Lieut. (With 2 OLC)
Beebout, Vance L., Lieut. (With OLC)
Beeson, Duane W., Lieut.
Bell, Robert D., Lieut.
Benson, Bernard E., Lieut.
Benson, Isaac D., Lieut.
Benson, William E., Lieut. (With OLC)
Biggs, Wilton D., Lieut.
Billings, Fred M., Jr., Lieut.
Billman, Robert J., T/Sgt.
Blanchette, Milton P., Lieut.
Blankenship, Irwin D., S/Sgt.
Bloom, Edward J., S/Sgt.
Bloom, Wilbur G., S/Sgt.
Blum, Franklin A., T/Sgt.
Bogan, John A., Lieut.
Boone, Robert L., Capt.
Bortscheller, Francis J., S/Sgt.
Boselli, Theodore J., Capt.
Bosso, Philip, S/Sgt. (With OLC)
Botuk, Charles, S/Sgt.
Bowles, Francis D., T/Sgt.
Bowman, Wendell C., Lieut.
Bowsman, Donald E., Sgt.
Boyer, Elbert H., Sgt.
Boykin, Travis M., Lieut.
Boyles, Frank R., Lieut.
Brann, Ralph A., Capt.
Brekovitz, Arthur I., Sgt. (With OLC)
Brissenden, Harry S., S/Sgt.
Buckland, Sherwood E., Maj.
Bullard, Nolan K., T/Sgt.
Burbank, Walter W., Capt. (With OLC)
Burns, Edwin, Cpl.
Burton, Arnold L., S/Sgt.
Butler, William E., T/Sgt.
Callender, Alvin D., Lieut.
Carbajal, O. Henry, Lieut.
Carey, Ernest H., Lieut. (With 2 OLC)
Carlson, Arnold R., Lieut.
Carlson, Jack L., Lieut. (With OLC)
Carter, Henry A., Jr., S/Sgt. *(With OLC)
Carter, Joseph W., Capt.
Casey, Anthony L., Sgt.
Colman, Henry L., Capt.
Compton, John T., Capt.
Cooke, Robert R., Jr., Lieut.
Copeland, James R., Lieut.
Cosby, Norman, Lieut.
Cox, David L., S/Sgt.
Cragg, Edward, Capt.
Crump, Walter P., Lieut. (With OLC)
Daugherty, Charles H., S/Sgt.
Davis, Burton A., M/Sgt.
*Davis, George H., Capt.
Dawson, Madison E., Cpl.
*Deal, Manford S., S/Sgt.
Decker, Walter B., Lieut. (With OLC)
Deibler, Donald L., T/Sgt.
*Del Vecchio, Eritreo E., Sgt.
Dickey, Norris Dean, S/Sgt. (With OLC)
Diflo, Frederick J., S/Sgt.
Dillon, Barclay H., Lieut.
Dobson, Grover L., T/Sgt.
Dorton, Randall M., Jr., Lieut. (With 3 OLC)
Douglas, Clarence K., T/Sgt.
Douthit, William E., S/Sgt.
Downs, Arthur J., S/Sgt.
Doxtator, Kenneth P., S/Sgt.
Drake, James A., S/Sgt.
Dulac, Arthur J., T/Sgt.
Eichholz, Jerome C., Lieut.
Elliott, Robert W., Lieut.
Embrey, Joe D., S/Sgt.
Erwin, Bruce W. H., Lieut.
Estes, James A., Lieut.
Estes, Ned B., Lieut. (With OLC)
Evans, Henry C. J., Lieut.
Faulkenbery, James M., S/Sgt.
Fink, Frank M., Lieut.
Fishburne, Paul Lee, Maj. (With OLC)
Folck, Alfred C., Lieut. (With OLC)
Foley, Joseph, Lieut.
*Foster, Clifford C., Cpl.
Franklin, Jay M., T/Sgt.
Franklin, Oliver R., Lieut.
Freschauf, Charles W., Lieut.
Fry, Donald E., S/Sgt.
Furtwangler, Robert W., S/Sgt.
Gabor, Harold G., S/Sgt.
Gardener, Allen Wynard, Jr., Lieut.
Gardner, Kenneth L., Sgt.
Gardner, Laurence E., Lieut.
Garnett, Walter L., Jr., Lieut.
Gartland, Eugene F., S/Sgt.
Garwood, John P., Pfc. (With OLC)
Gatling, Robert S., M/Sgt.
Gaudin, Joseph A., Jr., Lieut.
Gause, Everett, T/Sgt.
Gehay, John C., S/Sgt.
Geist, Steve, S/Sgt.
Gergash, Bernard A., Sgt.
Gheely, Thomas P., Jr., S/Sgt.
Giannini, Raymond W., Lieut.
Gibbons, John C., S/Sgt.
Gilbert, Charley L., S/Sgt.
Gilbert, Fred R., Lieut.
Gilbert, William M., Lieut.
Gillan, Robert F., Pfc.
Goff, Lyman H., Jr., Capt.
Gonsalves, John D., S/Sgt.
Gracie, Charles E., Sgt.
Grisaitis, William L., S/Sgt.
Hall, Lue R., S/Sgt.
Halloran, Robert R., Lieut.
Halsey, Mack, S/Sgt.
Hansell, Harry B., Lieut.
Hargrove, William R., T/Sgt.
Harris, Edwin S., Capt.
Harris, Ralph E., Jr., S/Sgt.
Hartt, Elton M., Cpl.
Hoerster, Morton K., Lieut. (With 2 OLC)
Hoffman, Francis P., Sgt.
Holland, Bertis W., S/Sgt.
Holman, Leslie W., Capt.
Holt, Francis W., Lieut.
Hope, Virgil E., Lieut.
Hopkins, Jerrold M., S/Sgt.
Hopson, William D., Maj.
Horner, Lawson C., Jr., Maj.
Horton, Charles W., Capt. (With OLC)
Hougham, Richard E., Lieut. (With OLC)
Houston, Rowland B., Lieut.
Ingelido, Michael Joseph, Capt.
Jacquet, Edward M., Lieut.
Jameson, Roy E., S/Sgt.
Jernigan, Lawrence E., Jr., Capt.
Johnson, Leon William, Col.
Johnson, Wesley T., Pfc.
Jones, Charles F., Lieut.
Jones, Edward J., Jr., Sgt.
Jones, Morris M., Lieut.
Jones, Ralph W., Lieut.
Jones, Raymond W., S/Sgt.
Joy, Ripley W., Lieut.
Kelley, Edward I., S/Sgt.
Kellogg, Ralph Mackenzie, Lieut. Col.
Kelm, Milton F., T/Sgt.
Kempton, William B., Lieut.
Kendig, Robert E., Lieut.
Kendrick, James B., Lieut.
Kereb, Philip, T/Sgt.
Kettering, Richard R., Lieut.
Kiefer, Gerald F., Sgt.
King, Charles C., Jr., Capt.
Kirby, Vance H., Sgt.
Kirk, Paul A., Lieut.
Kirk, Sam A., S/Sgt.
Kirkaldy, Robert B., Capt.
Kirkland, Robert Olin, S/Sgt. (With 2 OLC)
Kirn, Jacob P., S/Sgt.
*Klugh, Milton C., Capt.
Koslow, Walter J., Jr., Lieut.
Kulas, Vincent A., T/Sgt.
Ladd, William F., Capt.
Lamm, Louis J., Lieut.
Lamma, Ralph E., Lieut.
Lancaster, Jonathan Preston, Lieut.
Laplant, William P., Sgt.
Larimore, Doyt T., Sgt.
Larue, Jesse R., Sgt.
Lawson, John W., Lieut.
Lee, Robert G., T/Sgt.
Lemmerhirt, Leith C., Sgt. (With OLC)
Lundy, Kenneth W., Sgt.
McDermott, James J., Lieut. (With OLC)
McGiffin, Tom, Sgt.
McNeil, William A., Jr., S/Sgt.
Mahoney, James J., Capt. (With OLC)
Majure, Albert L., Lieut.
Manes, Donald L., Lieut.
Marks, Mortimer D., Lieut.
Marlow, William A., S/Sgt.
Marquez, Gabriel A., S/Sgt.
Marrier, Wayne A., Lieut. (With OLC)
Marsh, Edward Downing, Lieut. (With OLC)
Martin, George C., Sgt.
Mashburn, Henry D., Sgt.
Mason, Gerry L., Col.
Mastin, Charles H., Col.
*Mathews, James D., Lieut.
*Mathis, Jack W., Lieut. (With OLC)
Mathis, Paul Eric, S/Sgt. (With 2 OLC)
Mathis, Peyton S., Jr., Lieut.
Mathison, Paul Lewis, Capt.
Middleditch, Layman R., Jr., Maj.
Miko, Steve J., Sgt.
Miller, Gerald, Sgt.
Miller, Hubert E., Lieut.
Miller, Lynus P., Lieut.
Miflin, John A., Jr., Lieut.
Moran, Roger F., Lieut.
Moser, Joseph A., Cpl.
Mosier, Raymond R., Pvt.
Newman, Fred H., Lieut. (With OLC)
Northam, Dewey J., Pfc.
*O'Brien, James F., Sgt. (With OLC)
O'Brien, John R., Lieut.
Osborne, John F., Sgt. (With 3 OLC)
Owen, Calvin H., T/Sgt. (With 3 OLC)
Pacey, Orson E., Lieut.
Paine, John B., Lieut.
Palagi, Roland, S/Sgt.
Palmer, Leonard N., Capt.
Palmer, Marvin B., Lieut.
Palmer, Philip T., Lieut. (With OLC)
Palmer, Wallace W., Lieut.
Parcells, Walter G., S/Sgt.
Pardee, Elliot T., Capt.
Parfitt, Dale L., T/Sgt.
Park, Kenneth B., S/Sgt.
Parker, Archibald B., Sgt. (With OLC)
Parker, Perrie Charles, S/Sgt. (With 2 OLC)
Parker, William H., Lieut.
Parsons, Raymond N., Lieut.
Patch, Horace W., Lieut.
Patillo, Leslie G., Jr., Lieut.
Pavela, Jack P., Cpl.
Payne, John Davis, Capt.
Pearl, Lester J., S/Sgt.
Peck, Fred R., Jr., Lieut.
Pigman, Willis E., Sgt.
*Price, Foy L., S/Sgt. (With OLC)
Rand, Robert D., Lieut.
Rex, Edward M., Lieut. (With OLC)
Rodger, John T., Lieut (With OLC)
Roller, Jack, Lieut.
Root, Leslie, T/Sgt. (With OLC)
Sample, Harry T., Jr., Lieut.
Santerre, Homer N., Lieut.
Schulstad, Louis M., Jr., Lieut.
Sheetz, Homer G., S/Sgt. (With 3 OLC)
Sheggrud, Earl, Capt.
Shoifet, Jacob, S/Sgt.
Smith, Merle A., Jr., Sgt.
Smith, Robert O., Sgt.
Smock, Edmund L., T/Sgt.
Snavely, Eugene H., Col.
Snider, Harold E., Lieut.
Spieth, Harry E., Jr., Maj.
Stewart, James M., Lieut.
Stimadorakis, John, S/Sgt.
Stoddart, Percy, Jr., Maj.
Stymak, Raymond T., T/Sgt.
Sweeney, Daniel J., Capt.
Tennant, Richard G., Sgt.
Thacker, Robert E., Capt.
Thompson, Robert M., Lieut.
Timpe, David W., S/Sgt.
Toloczko, Leonard, Cpl.
Torvend, Eugene F., Capt.
Van Etten, James R., Sgt. (With OLC).
Varhol, Joe J., Lieut.
Warren, Henry E., S/Sgt. (With OLC)
Watkins, John T., Jr., Lieut.
Watson, Charles F., Lieut.
Wherley, Clifford R., S/Sgt. (With 3 OLC)
Whitlock, George E., Sgt.
Wissert, Melvin, Cpl.
Wolf, Henry R., S/Sgt.
Wood, William E., Cpl.
Woods, Francis A., S/Sgt.
Zbinden, Harold D., S/Sgt.
Zinn, John F., Capt. (With OLC)
Zipfel, Donald C., Lieut.

OAK LEAF CLUSTERS TO AIR MEDAL

Ayers, William E., Lieut.
Bahnmiller, Melvin C., Sgt. (3rd)
Bennett, Francis L., Sgt. (3rd)
Birk, Ralph A., Lieut. (3rd)
Black, William Emanuel, Jr., Lieut.
Brannon, Richard P., Lieut.
Brown, Emory O., S/Sgt.
Browning, Richard C., Lieut. (3rd)
Burger, John, T/Sgt.
Caserta, Joseph M., Sgt. (2nd)
Caviness, Sanford L., Cpl.
Chalmers, John H., Lieut. (2nd)
*Chopping, Robert D., S/Sgt.
Cook, Charles R., Lieut. (2nd)
Crosson, Gerald J., Capt.
Cutforth, Charles Clifton, Lieut. (2nd)
Czekanski, Edward J., Sgt. (4th)
Daddysman, James H., M/Sgt.
Darelius, Roderick G., Capt.
Diffley, John M., Lieut. (2nd)
Dunn, Edgar H., Jr., Capt.
Gorton, Theodore H., Capt.
Hill, Charles D., Jr., S/Sgt.
Legg, John Carter, III, Capt.
Lewis, Yale H., Lieut.
McCabe, Kenneth C., Sgt.
Norton, Harold W., Capt.
Purdy, Norman E., Lieut.
Riddle, William M., Lieut.
Sianis, Pete C., Capt.
Thomas, Joseph A., Maj.
Trotter, Claude A., Jr., Capt.
Ward, Charles U., S/Sgt.
Zamperini, Louis S., Lieut. ☆

Lt. Fred R. Gilbert

Capt. H. W. Norton

Lt. L. S. Zamperini

Lt. R. R. Kettering

Maj. P. L. Fishburne

Sgt. John B. Logan

'WINGED VICTORY'

In civilian clothes, the heroes of "Winged Victory" arrive at a barracks. They get a round ribbing from the GIs on duty.

The six main characters meet for the first time. They are played by (top, left to right) Pvt. Barry Nelson, Pvt. Dick Hogan, Cpl. Mark Daniels and (seated) Sgt. Rune Hultman, Pfc. Edmond O'Brien and Pvt. Don Taylor.

By Cpl. MARK MURPHY

THE Army Air Forces took off on a new mission in late November, and for the first time in history presented a show on Broadway. The action was competely successful; New York was captured.

The show was "Winged Victory," written and directed by Moss Hart, one of the country's leading playwrights, and with a cast of 300 officers and men of the AAF and fifty women. Hart wrote the show upon request of the AAF and was flown some 28,000 miles to installations throughout the country in his hunt for material.

New York theatre critics, normally dour fellows difficult to please, became actually rapturous about "Winged Victory" and brought out adjectives people hadn't seen in years. John Chapman of the News, one of the most acid characters among the critics, wrote that he would like to hug Moss Hart for the job he did on the spectacle. Ward Morehouse of the Sun, one of Broadway's elders, commented, "Here is a thrilling show, a combination of play and spectacle that dwarfs all else of the current season and beside which the majority of productions of the present decade and century shrink to mediocrity." Howard Barnes of the Herald Tribune, wrote, " 'Winged Victory' is a fine war play, a fine play and a stupendous piece of theatre. It gives incomparable distinction to the season." The first night audience, well-stocked with ermine, mink, gold braid, stars and eagles, was wildly enthusiastic. The cast was cheered for a number of curtain calls, and the patrons yelled for Hart until he stepped on the stage. He said: "I just heard over the radio that Berlin has been bombed again. That's what this play is about."

WHILE the production portrays a phase of what lies behind the bombing of Berlin, there is little combat in it and almost no discussion of air fighting. "Winged Victory" is more the story of the AAF Training Command and the young men in it. Hart concentrates on the story of how pilots are made, and the story is a great one. He tells it simply and movingly. Hart in his investigation of the Air Forces spent most of his time at training fields and with cadets or GIs waiting to be cadets, and in "Winged Victory" he does a superb job of reporting what he saw and heard. The show opens with the scene of a backyard at a home in Mapleton, Ohio, where Allan Ross, Frankie Davis and Pinky Scariano, all nuts about B-17s, B-24s and P-38s, get their letters ordering them to report for cadet training. The next scene is a barracks street at a classification center where they find out they won't see an airplane for months, and will clean a lot of latrines before they ever climb into a cockpit. There they meet Bobby Grills, a farm boy from Oregon; Irving Miller, straight from a hardware store in Brooklyn, and Dave Anderson, whose father owns some oil wells in Texas.

From there, the play depicts the life of young men who want to become pilots. They go through tests until they are punchy, see for only a few hours each week their wives who have come to live near them, and complain with pride about how tough their instructors are. By graduation time, the last scene of the first act, Frankie, whose wife was pregnant, has been killed in an accident on a night solo, and Pinky has washed out because he failed a depth-perception test.

In the second act, Bobby gets married and his honeymoon is cut short by orders cancelling all leaves from his group. Allan and Irving are pilot and co-pilot of a Fortress, which they name "Winged Victory," and they get Pinky for a turret gunner. There follow two scenes, one of the men getting ready for the big hop and the other of their wives waiting in an Oakland hotel room and hearing the bombers fly over on their way to the South Pacific.

A Christmas party on an island features some swell comedy acts, and then during the singing of "Silent Night," the sirens wail, and an air raid is on. The next scene is laid outside a field hospital, where Allan and Irving bring in Pinky, badly wounded. While waiting for word of how he will get along, Allan opens a letter received during the Christmas party, which tells him he has a son, and he and Irving talk of the future.

"Everybody is going to have the biggest chance in history to make the whole goddam world over," Irving says.

They learn that Pinky will get well.

"The world will be better for our children, won't it, Irv?" asks Allan.

"At least, *we're* trying, Al," says Irving, and the show closes on that note.

This quick synopsis tells only a little of the actual spectacle which is causing audiences at each performance to roar their approval. Hart uses seventeen scenes, mounted on five turntable stages, and each of them is brilliant. He has caught the spirit and the language of the men who are training to fly. Some scenes are tender and moving, others robustly funny. It is a pageant for civilians, and in that "Winged Victory" is an inspiring job.

When a directive was issued at Headquarters a few months ago, stating that the AAF was planning to stage a show to be written and directed by Moss Hart, applications for parts in the production poured in by the thousands, a number of them from eighteen and nineteen-year-olds who said they were experienced Shakespearean players. Hart and the staff furnished him by Lieut. Col. Dudley S. Dean, director of the Air Forces Branch of Army Emergency Relief, went through all applications like a draft board, marking the papers 1-A, 2-B, 3-H, and—4-F.

They were able to find men in the AAF who had experience and others who had plenty of talent. Sgt. Harry Horner, who designed the sets for Hart, is one of the most capable stage designers in the theatre, coming to this country with the late Max Reinhardt, noted for the massive theatrical spectacles he once produced. The lighting was handled by Sgt. Abe Feder, who in civilian life was so prominent in the theatre that his work was known merely as "Feder lighting."

Audiences, somewhat unable to contain themselves, often start applauding the music before the overture is finished. The large orchestra, hailed as one of the best ever to play for a Broadway show, is directed by Sgt. David Rose, who also arranged the score. The overture has the Air Corps Song for a theme. Other songs often sung by men of the AAF are used as themes throughout the show.

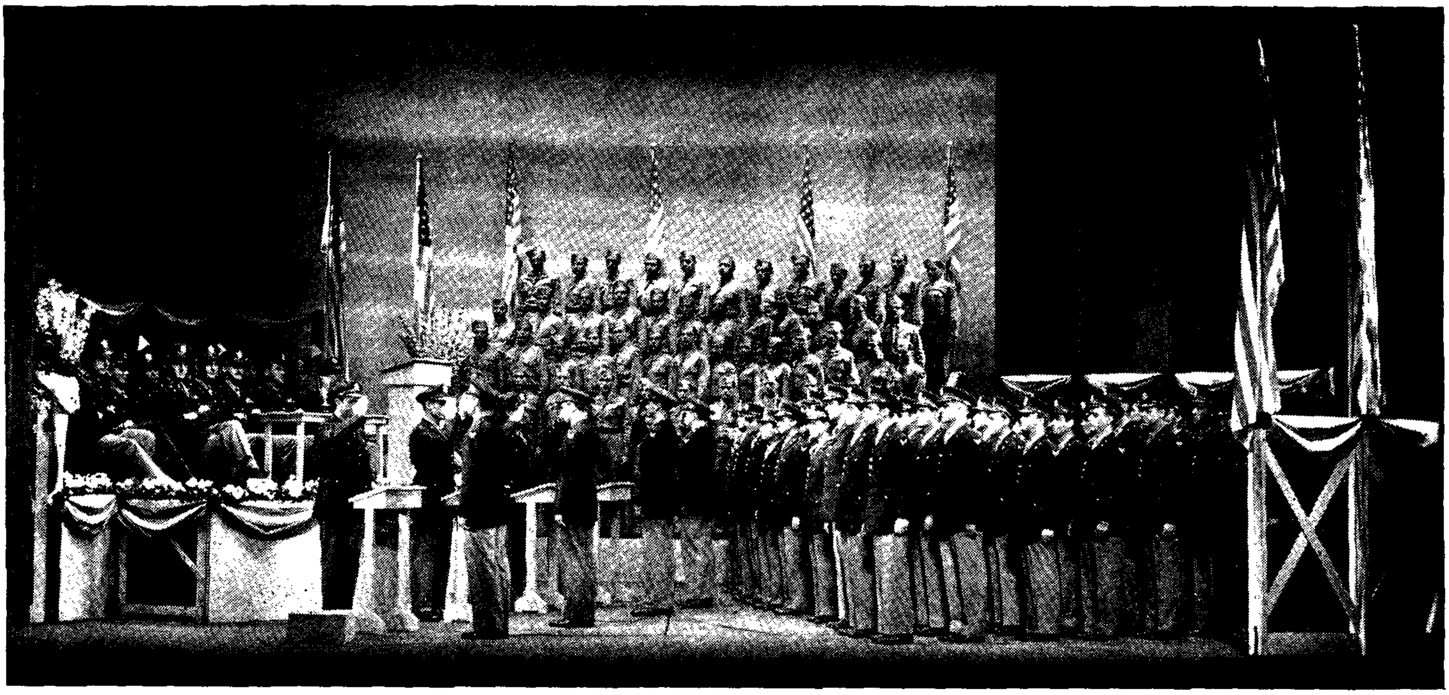
Many members of the cast had had considerable experience in New York and in Hollywood before going into the Army. Pfc. Edmond O'Brien, who plays the part of Irving Miller, had appeared frequently on Broadway and had taken roles in several Shakespeare productions. He was working in a Deanna Durbin picture when he entered the Army. Cpl. Mark Daniels, who appears as Allan Ross, which probably could be called the lead of the show, was under contract to MGM before he donned a uniform. Lee J. Cobb, who plays a doctor in a dramatic sequence in the last scene, was one of the most popular actors in the New York theatre.

The 300 men in "Winged Victory" who live at the Narragansett Hotel in Manhattan, have formations and drilling each day. They like drilling no better than they did when they were stationed at fields and camps over the country. Hart, whom they think a wonderful fellow, arranged for most of the walk-on parts by women to be played by wives of men in the show.

There have been no plans as yet for taking the show on the road. When the show opened in New York on Saturday, November 20, it already had sold $165,000 worth of tickets in advance, and admission for the next few weeks was almost impossible to buy. Warner Brothers had offered a down payment of a million dollars for the movie rights. The production promises to bring millions to Army Emergency Relief which receives all the proceeds.

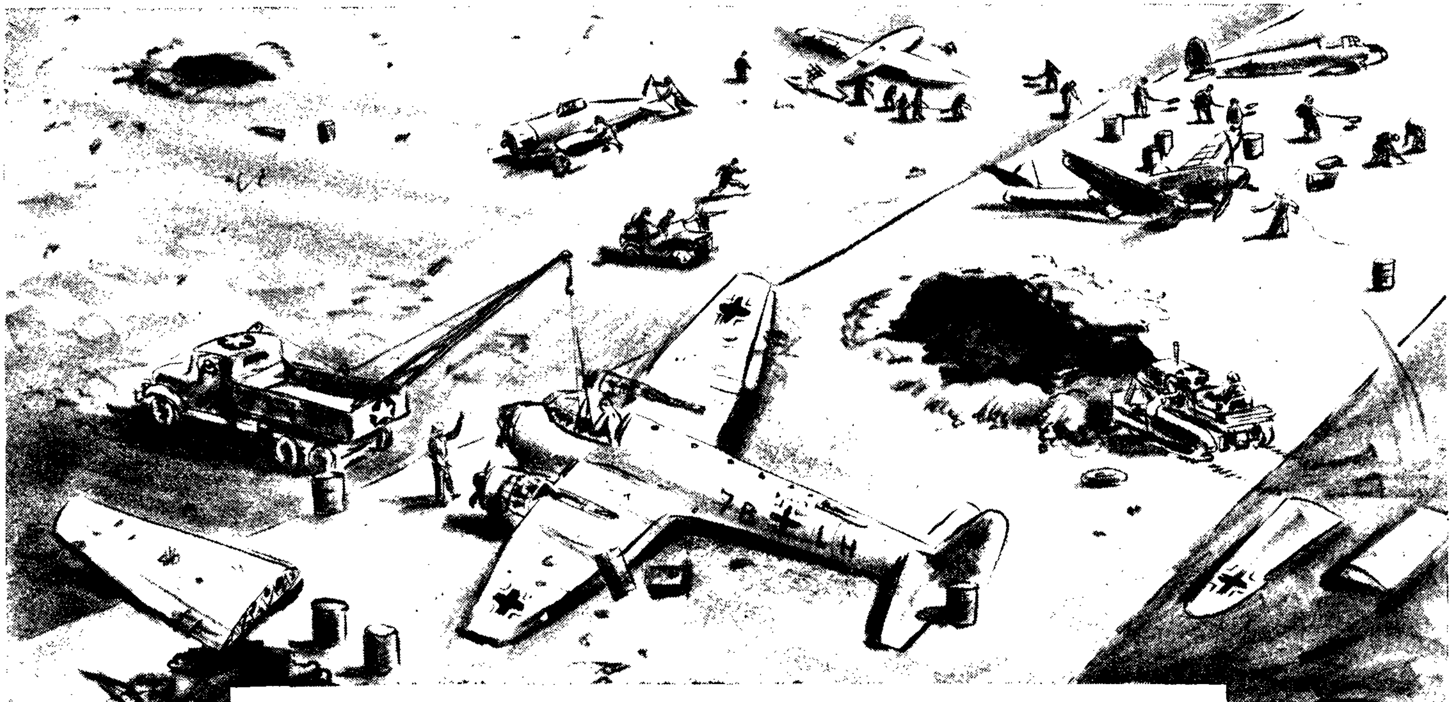
Of the probable length of "Winged Victory's" run in New York, the New York Times critic, Lewis Nichols, wrote: "They have given the theatre a play which should remain on Broadway for the usual enlistment period—the end of the war plus six months." ☆

The graduation scene is one of the most colorful of the show. The boys get their wings and their families, wives and girls are there to help them celebrate.



ON THE COMBAT LINE

AIR SERVICE COMMAND REPORTS FROM THEATRES OF OPERATIONS



MAINTENANCE UNDER FIRE

Illustrated by Capt. RAYMOND CREEKMORE

As the Allied armies pressed forward in Italy after the Salerno landings, dungaree-clad, dust-covered ground units of the Northwest African Air Service Command worked at the task of building and stocking airdromes with fuel, ammunition and bombs to permit constant aerial cover for combat units.

ASC personnel arrived shortly after infantry and artillery of the Fifth Army had gained a tochold on the Salerno beachhead. Aviation engineers began laying out and building airfields for our fighter planes. Even while enemy artillery and aircraft were striking back with every ounce of strength the Germans could muster, other ASC units were put ashore with tons of aviation gasoline, tons of bombs and millions of rounds of ammunition.

By moonlight, on the first night of the landing, the engineers laid out a runway in a cultivated field of cotton and wheat, several enlisted men chopping a rail fence into stakes to mark the position. They worked well into the night while other details were unloading their equipment from the supply ship. Meanwhile, graders, rollers and scrapers had begun the task of creating an airfield. Within 24 hours, the field was completed and a second airdrome was in process of construction.

All the while the small group of engineers dodged bombs and machine-gun bullets from German aircraft, but they worked steadily. Because of the noise made by the heavy machinery, each piece, beside its operator, carried a lookout whose job was to stand on top of the machine watching for possible air attacks.

Within a week on Italian soil, ASC units had completed three airfields, constructing runways to accommodate fighter aircraft, taxi strips around them and dispersal areas on each field for grounded aircraft.

The engineers worked all night every night, sprinkling the runways and taxi strips to keep down the silty, powdery dust that covered the area. They found it necessary to cut down trees and fill in scores of drainage ditches. In addition, in the earlier stages of the invasion, construction personnel had to man antiaircraft artillery pieces and machine guns around the fields to ward off attacks.

Practically all of the work done by these AAF ground units was accomplished under fire. Enemy artillery, forced back all along the line, hurled almost continuous shellfire toward the beaches. Overhead German FW-190s made one sneak raid after another.

As the Italian campaign progressed well beyond the Salerno area, a small group of ASC troops moved onto one of the largest and finest airdromes in Italy, which the Germans had wrecked in their retreat to the north. So complete was the devastation that an Italian air officer, volunteering his services to the Americans, estimated that at least six weeks would be required to make the field operational.

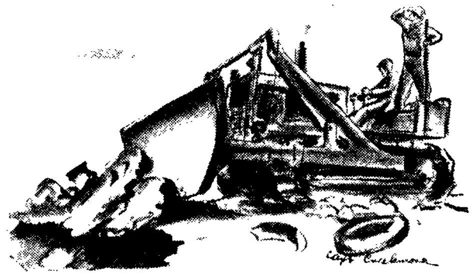
Our troops made it ready in less than 72 hours.

The field had remained in German hands even after the main Nazi battle force had already begun its retreat. With systematic destruction, Nazi demolition experts had worked on the base and its millions of dollars worth of hangars, shops and grass-sod runways. From a distance, American paratroopers, in advance of the main Allied push on the Fifth Army front, had been able to see and hear the devastation being carried out on what once had been a center of the Royal

Italian Air Force. Explosions had rocked the countryside for a day and a night, and fires had burned for days as every building and every piece of equipment was destroyed. As they retreated, German landmine and booby-trap experts had laid potential death traps at every conceivable place on and around the field.

To insure that no Allied plane could use the field immediately, even for an emergency landing, the Germans had dragged scores of burned and wrecked Axis planes onto the runways. In addition, great holes were blasted on landing and taxiing strips.

Within twenty hours of the field's capture Air Force engineers were on the base with mobile cranes, bulldozers and heavy earth-moving equipment. Working just behind mine demolition squads, the engineers cleared a 3,500-foot landing strip, filling a dozen craters in its length, in exactly four hours. Simultaneously, ASC mobile repair units—the men to whom falls the job of keeping fighting airplanes in fighting shape—were cleaning out bomb-blasted, fire-gutted hangars. The work, incidentally, was carried out to the accompaniment of British artillery set up *behind* the airbase.



Hundreds of tons of wrecked German and Italian airplanes were hauled out of what once had been metal-covered steel hangars and dumped in a series of salvage piles on one side of the field.

On the third day of their work, the ASC troops had the field sufficiently cleaned to enable a flight of RAF reconnaissance Spitfires to make an emergency landing. On the fourth day of American occupancy, the base was ready to accommodate fighter planes.

What occurred on this field in those four days could not have happened a year ago for the reason that no one believed it possible that Air Force group personnel could operate with such efficiency virtually under the nose of the enemy. Actually, the rumble of German artillery could be heard from this field for the first three days of American occupancy.

By evolutionary steps—first prompted by necessity last spring in Tunisia—the Air Service Command had learned how to operate in advanced positions. What was learned in Tunisia was applied in Sicily, and in Italy the process reached perfection.

What happened on this field has been done before, but American troops have seldom encountered such savage demolition on the part of the enemy. It is safe to assume that the retreating enemy will leave even more completely wrecked airfields for ASC troops on the road to Berlin. But, because of their training and experience, these troops are confident that the superiority Allied air power now enjoys will not suffer for want of fields and operational combat planes.

'SCROUNGING' IN LIBYA

THE "Scrounge Boys" of the Libyan desert will go down in aircraft maintenance history for making kleptomania a military science.

A form of maneuver indulged in by commanding colonels and GIs alike, scrounging is the art of searching for, finding, pre-empting and adapting for one's own use whatever the countryside has to offer.

In the days not so long ago when scrounging flourished in Libya, the desert country had plenty to offer, considering that scrounging flowers in direct proportion to the length of the military supply lines. Then, too, General Rommel on his way through the desert in reverse left plenty of stuff for the boys to scrounge. The general and his men passed through in considerable haste, and Allied aircraft and artillery took certain steps to insure that much equipment would be abandoned.

From this scrounger's paradise, widespread as it may have been, our ground personnel made everything from machine shops to warm showers — yes, *warm* showers.

Scroungers in ankle-deep sand and under a scorching sun did the kind of work that is done at home in elaborate repair depots. They worked with equipment that would drive the Patent Office nuts. Sgt. R. L. Garretson charged batteries with a condemned aircraft generator hooked to a reconditioned Italian electric motor. Tech. Sgt. John Przybylski, who needed mobile equipment for paint jobs on planes and shops dispersed over the airfields of the Middle East where scores of yards separated each unit, scrounged himself a German gun carriage and the body of a Fiat truck. He bolted his air compressor and paint cans on the resulting trailer and had it hauled around the field by a jeep.

Transportation on these huge fields was always a problem, and one of the ASC companies had no less than twelve trucks and twelve trailers, all left by General Rommel's hurried forces. Automotive scrounging was developed into a fine science. Likely trucks or autos were spotted from the air, as well as by several mechanics who were constantly roving the desert in search of equipment. These mechs knew precisely what the Germans would do to a vehicle before abandoning it, so when the men went on a scrounging party, they took with them the items usually smashed by the Germans, installed them, and drove away with the "useless" vehicle. Some scroungers were so choosy they would take only certain models of German equipment.

IN one instance, the fuselage of a wrecked German plane was stripped of all but the metallic framework and set in the ground nose down. The tail section was sawed off at the last bulkhead, providing a platform on which was set a large metal water barrel also left by Rommel. After the barrel was filled from a water truck each morning, the sun heated it all day, and at night the men stepped into the fuselage frame stall, pulled a chain and had a nice warm shower. Ice water was a blessing in those parts; a German ice box operated by an Italian motor turned the trick. A larger German ice box, probably a meat storage shed in Rommel's palmy days, was converted into a photographic laboratory and dark room. A shop inter-telephone system used magnetos from junked enemy trucks, and the telephones, looking like Alexander Graham Bell originals, were scrounged on a "moonlight requisition" from a bomb-smashed Libyan town.

Few of these scroungers had any mechanical or electrical training before they entered the Army. Ingenuity turned the trick.

With salvaged materials the scroungers made special gear pullers, bolt pullers, prop wrenches, pipe taps and even a bombsight repair stand which required the most painstaking care so that the delicate instruments could be kept perfectly level. They made dozens of special gun mounts, described by the gunners, understandably fastidious about such things, as just as good as the factory product.

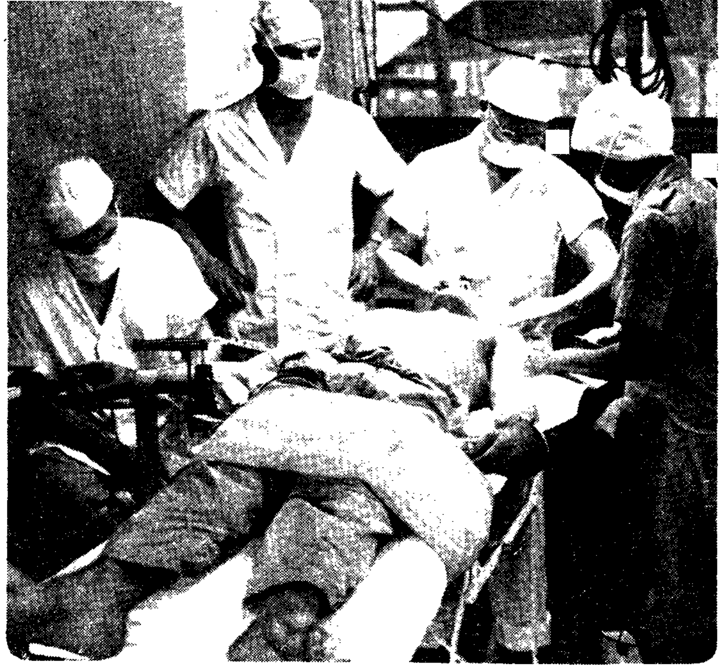
The men made their own pressure stoves for heating, cooking and laundry work. The basis for this convenient item was left by the Luftwaffe in the form of oxygen bottles.

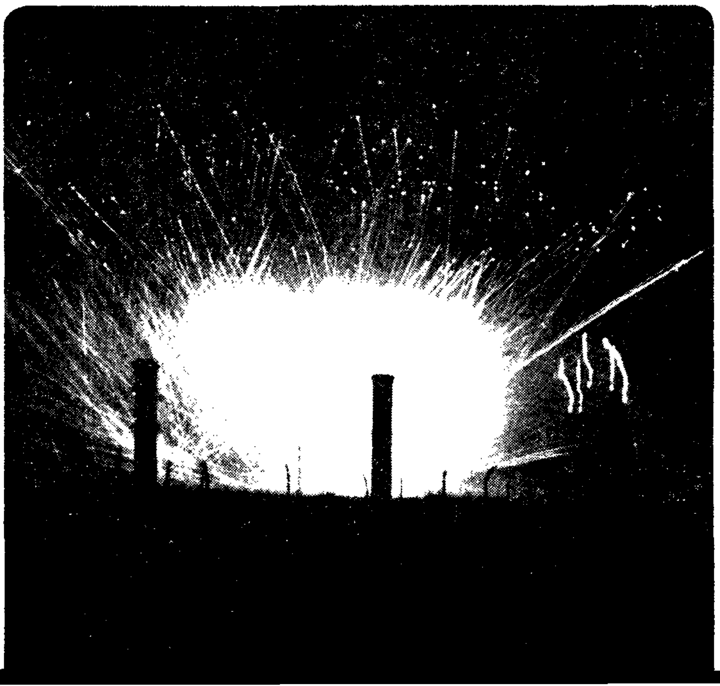
The last word in scrounging goes to the GIs. The non-com's club was once an Italian bomb shelter, a handsome structure built half underground. The furnishings consisted of adapted bomb-fin cases. The flooring was taken from the ruins of an Italian colonial center—the finest Carrara marble. ☆

are your responsibility, and to another, combat films are yours. This is all well enough, but only on one condition—we must never forget that sound organization cannot lose sight of technological realities. We cannot, by any static act of classification and division, prevent the shift of the center of gravity of operational knowledge from the zone of the interior to the combat areas, and that shift must be reflected in film production. The only choice of the administrators is between seizing an opportunity and neglecting it—and the cost of neglect is loss of men and materiel for lack of the information and training which overseas technical films can give.

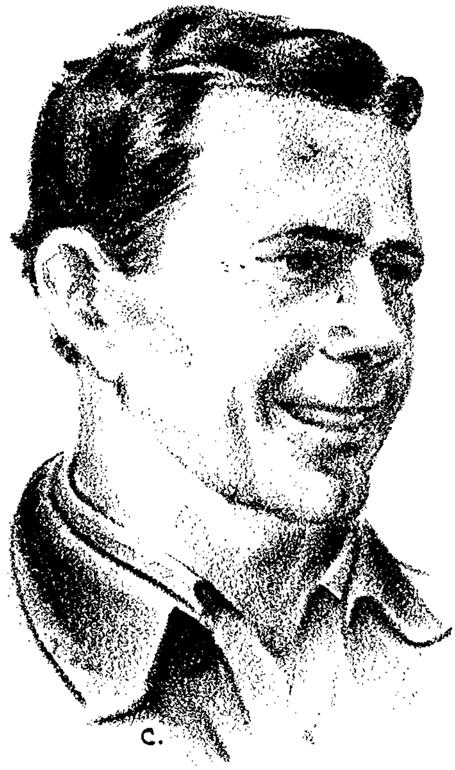
The answer in this case is largely a matter of bridging existing gaps in organization. First, there must be close and continuous contact between the technical and training departments of the AAF and the Motion Picture Service Detachment. The second step is to pass this material on, in film outline form, to the combat camera units and, where necessary, to attach to the units writer-directors capable of shooting technical material to the best advantage. The third need is for liaison in reverse, between the Motion Picture Service Detachment personnel responsible for editing incoming material, and the Air Force departments charged with approving technical reports in their respective fields. Finally, the combat camera units should be encouraged to initiate technical projects themselves to a greater extent. Even when a job is being done in the wrong way, filming it may be valuable, in that the picture acquaints Headquarters with the situation and may suggest a better solution. When the wrong procedure is adopted in the field, it is usually because the approved procedure is not the right answer either.

The soldier, whether on the ground or in the air, learns chiefly by experience, but films can prepare him to learn faster and better. The value of military educational films can hardly be overestimated, but they must be the right kind of films—simple, realistic, direct, sound in doctrine and orientation. It is the determination of the Technical Services Division, the Motion Picture Service Detachment, and the combat camera units to produce films of that character, more and more of them, and as fast as is humanly possible. ☆





Top—The camera crews try to cover every phase of Air Force activity. A motion picture camera, set up in the operating room of the 1st Evacuation Hospital at Oro Bay, recorded an entire operation on a wounded gunner.
Center—An air alert has just sounded at Nadzab, New Guinea. American soldiers in a jeep and a native scurry from attacking Jap planes.
Bottom—A Combat Camera photographer in Naples got this Fourth of July effect when he photographed intense Allied anti-aircraft fire blazing away at German night raiders. The bright streaks of light at the right were caused by flares dropped by the enemy planes.



ONE MAN CREW

By

Capt. Robert V. Guelich and **Sgt. William G. Mors**

AIR FORCE Staff Correspondent — **China-Burma-India Theatre**

TECH. SGT. DOUG LABAT didn't learn to be a gunner, a flight engineer or a pilot the academic way. But in one day he proved he could serve as all three—and it paid off.

Take-off time for his plane, "Old 26," of the Flying Cobra squadron, was the morning of November 11—Armistice Day. Sergeant Labat was flight engineer of this B-24 crew. He had taken over the top gunner's spot when his outfit got its new Liberator with the nose turret position.

Target for the day was He-ho airdrome, deep in Jap-held Burma. Photo recon pictures showed Zeros at He-ho, lots of them; every man looked at the pictures the night before. Labat looked at them too. He knew and every other crew member knew the bombers were going to be intercepted.

Take-off was routine, with Sergeant Labat on the flight deck behind pilot Lieut. Ben Graves and co-pilot Lieut. Cy Kurth. Because they were to fly number three position in the first element of the squadron, Graves and Kurth swapped seats as they headed toward Burma through some scattered clouds, flying formation that tightened up as the planes neared their target several hours later.

At 16,000 feet they went in on their bombing runs, hindered only by cloud fluffs below. At 1137 the bombardier sang out that welcome cry, "Bombs away"—and the Japs struck. Sixteen Zeros dove out of a blinding sun.

Sergeant Labat, gunner, was tracking one of the Nips as it swung out for its attack on "Old 26" when Graves called out a Zero coming in at one o'clock. But it was too late. Cannon shells ripped through the bomber, one exploding in the auxiliary wing tank with a burst of flaming gasoline.

The other Nip was still in Labat's sights, but he was so intent on hitting him that he wasn't using his sights; a short burst from his twin fifties showed the Jap was almost in range as he came boring in for a frontal atttack.

"I OPENED up and poured a long burst that seemed like 600, but probably was 60, rounds into the Jap. Our nose turret wasn't firing at the Zero; I wondered why. (Staff Sgt. William Burtch was killed by the first Zero as he, like Labat, was tracking the second Jap plane.) My guns were so hot the turret cut out; I hit the reset button and threw more lead at him as he kept coming in at our nose until I was sure he was going to pull one of those 'For the Emperor' tricks and ram us.

"The terrific crash of an explosive shell, flying glass and debris around my legs, the rush of cold air, and a burst of flame from the Jap as some of my shells exploded his gas tanks—all happened simultaneously. When it seemed too late, the Zero pulled up just enough to miss us, hurtling over my guns like a Roman candle on the Fourth of July.

"I knew we were hit bad now; our wing still was burning. Before I could get out of my turret to see what had happened, the right wing dropped and we slid off in a skidding dive underneath the other planes in our formation. Then I couldn't get out of my turret because the negative 'G' had me plastered against the top. By reaching down to the ammunition boxes, I finally managed to pull myself down out of the dome as our radio command set was screeching 'Bail out, bail out before it's too late . . . bail out, you don't have a chance, bail out.'

"I never had thought much about hitting the silk before and I didn't have time to think about it then for something was wrong in the cockpit and I had to know what it was. It was bad. Blood was splattered over everything, and maps and papers were flying around in the blast of air coming through a shell hole in the windshield. Kurth was slumped forward over the stick, Graves was wavering in his seat, and we were dropping fast."

As the sergeant, who had just shot down his first Zero in 256 hours of combat flying, leaned over to get Kurth off the controls, Graves pleaded, "For God's sake, get him out of there."

Labat unbuckled Kurth from his chute and dragged him out of the seat. It didn't take a second glance to see what had happened. A 20 mm shell had pierced the windshield and exploded in Cy's face; he was dead—the quick and easy way.

Sergeant Labat, pilot, clambered into the empty seat, captured the loose controls and gradually dragged the diving Liberator out of its plunge. Graves, suffering from shrapnel wounds and shock from the shell explosion within a few feet from his head, still clung to consciousness and the controls. The plane responded and leveled off at 8,000 feet, still over enemy territory but far out of formation.

THE wing fire had put itself out—the self-sealing fuel tank, apparently having sealed off the gasoline after the first splattering from the explosive shell. The plane was riddled, for two Zeros had followed "Old 26" most of the way down peppering it with shells. Both waist gunners watched bullets pierce the fuselage where they had been a fraction of a second before as they were tossed about by the falling plane, but they ducked them all; their numbers hadn't come up yet.

The hydraulic system was perforated in half a dozen places and the prop governor on No. 3 was frozen at 2300 rpm. But the plane still was flying and had made its way back into another squadron's formation for protection. Graves, though still fighting off unconsciousness, told Labat he could hold the plane so the pilot-gunner took over his turret again.

Navigator Lieut. Grant Erwin had been calling out Zero clock positions from his dome in front of the cockpit but couldn't get any responses on the interphone. He climbed up to the flight deck to investigate. When he saw Graves was wounded and flying by himself, he patched up his wounds with first aid bandages and then slid into the empty seat to help fly the plane. Although he wasn't a pilot, he

An aircrew needs good pinch hitters when the going gets tough in combat.

had picked up co-piloting time with the RCAF and with the USAAF after his transfer.

No sooner had Erwin filled in on the controls than a Jap I-45 started coming in from twelve o'clock to finish off the crippled Liberator. Graves threw the ship into violent evasive maneuvers but gunner Labat held his guns on the Nip and drilled it with short bursts until the Jap finally slid off in a dive that was witnessed by other crews and scored as a probable.

Despite the protection of two other ships that stayed with "Old 26" another Zero came in for a pass but the guns from all three planes played a tune on him. Without pressing his attack, the Zero pulled away and headed for home. Still another Zero made a pass but the tail guns of one of the protecting ships scared him homeward too.

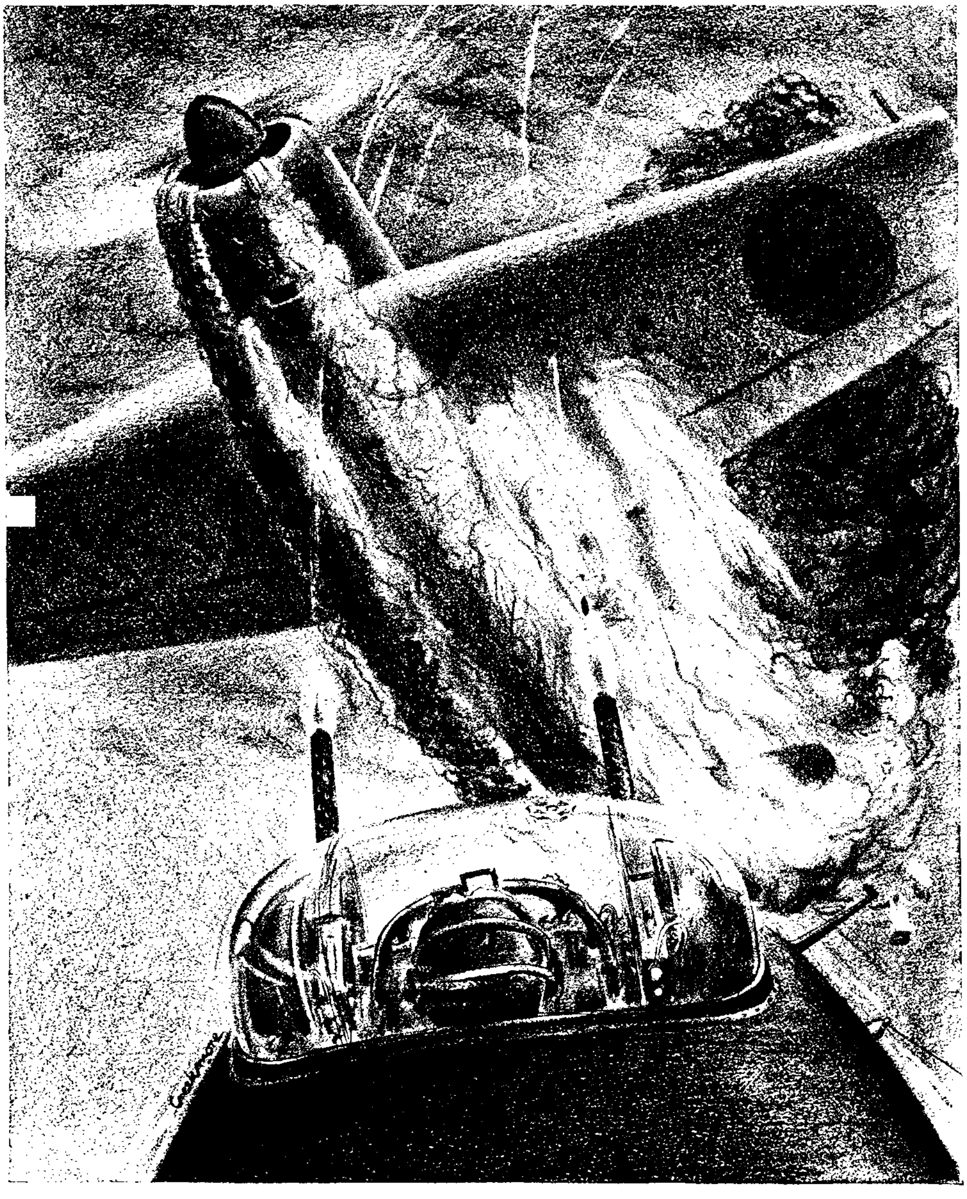
Apparently away from the last of the Japs, Labat slipped out of his turret (Score: one Zero destroyed, one I-45 probably destroyed, one Liberator and crew saved) and discovered that Lieutenant Erwin was helping fly the ship. He then checked the gas supply and found it adequate for the long haul back home.

Bombardier Lieut. Cecil Day and Staff Sgt. Robert Block (radio operator and waist gunner) meantime were breaking through the glass of the jammed nose turret where they discovered Burtch dead, with his guns pointed in the direction of the Zero he never got a shot at, for the first pass by the Jap from the sun had got him. His death grip on the interphone button had kept the system from operating.

Staff Sgt. James McKernan in his belly turret had been doused by fluid from the ruptured hydraulic lines but had kept playing his guns to make the Japs think he still was in action, although he couldn't see through his glass enclosure.

After checking the gas, Labat relieved Erwin at the controls so he could return to his navigating job. During the air battles, Erwin had mentally noted headings and speed and now was able to determine the location of the plane after the protecting ships pulled away in what was believed to be safe country. Lieutenant Day, who had been circulating through the ship bolstering the spirits of the rest of the crew, now took over the top turret position, although he was the bombardier.

Illustrated by Capt. RAYMOND CREEKMORE



Behind the controls again, pilot Labat mentally projected the entire return trip. "I even pictured myself on the approach to our field and went to the extent of worrying whether I could clear the wires at the end of the field on landing, even to the point of foolishly thinking of flying under them."

As Graves, still in a semi-conscious condition, continually made instinctive adjustments of the controls, Labat patiently corrected them and eased the ship back on course. Although No. 3 prop had been a drag with its frozen governor, it was a help at cruising speed so it was not feathered.

"Zero at five o'clock at 2,000 yards" came barking over the interphone from waist gunner Sergeant Block, jolting everyone from their reveries. A grim tenseness settled down on "Old 26," for the ship had been through a lot of hell already and another attack might be the last straw. A second Zero appeared and both started to follow the wounded ship. The crew sat and waited, a wait that was years, a wait that only was ended when Erwin told Labat to head for an emergency landing at a nearby field. When the plane nosed down for its approach to the field, the Zeros turned away.

Then, on the downwind leg of the landing approach, Labat learned that the crew couldn't get the landing gear cranked down. Turning the controls over to Erwin, with instructions not to go in for a landing until the gear was reported down, Labat struggled with the crank until he got both wheels down (the nose wheel had dropped down OK) but one wouldn't lock into position. The plane was on its final approach, hardly fifteen feet above some sailing ships, before the wheel finally clicked into place.

Swinging back to the flight deck the sergeant, who had been nursing the ship

Is he kidding?

We don't know, young lady—but we agree with you that it's time for him to pass on that copy of AIR FORCE. How about it, soldier? Do you share your copy of the service journal with the other men of your unit? Don't hog your copy; don't mail it home; don't keep it for your personal file.

Pass it on!

all the way back, saw a dike looming up ahead of the plane— too high to clear. All he could do, as Graves was shooting the landing was talk into his ear. "Haul back, haul back, haul back . . ." The big plane did ease up a bit but the wheels dug into the dike and before anyone could catch another breath, Graves had recovered and set the ship down perfectly on the runway.

With only 800 pounds hydraulic pressure remaining, Labat again resorted to repetition as he warned Erwin and Graves to keep their feet on the brakes, not to let up for an instant, for there was only one application of brakes left in "Old 26."

THE brakes were held and as the battered ship rolled to a stop Graves, who had been flying on spirit and instinct all the way, passed out completely. Ambulance and crash truck came to a wailing stop as Labat and Erwin carried their wounded pilot out. Coming to momentarily, Graves' only question was, "How is Cy?" then he lapsed into unconsciousness again and was hospitalized.

"Old 26" got back because it had more than a one-man crew, but the men who saved the ship were the ones who could pinch-hit for other teammates in a tight spot.

Labat shot down the Nips as a gunner, he pulled the plane out of its dive and flew it most of the way back to base as a pilot, he kept his ship in the air and then got it safely down on the ground as flight engineer. He was a one-man crew himself.

Navigator Erwin successfully pinch-hit as co-pilot, sticking with his courageous pilot through the perilous landing. Bombardier Day pinch-hit as a turret gunner, after dropping his eggs squarely on the He-ho airdrome, and still was at battle station as his plane hit the runway.

Said Tech. Sgt. Doug Labat, "Those crewmates of mine really deserve a lot of credit; they kept calm when most guys would have fallen apart. They did a wonderful job in bringing us back home."

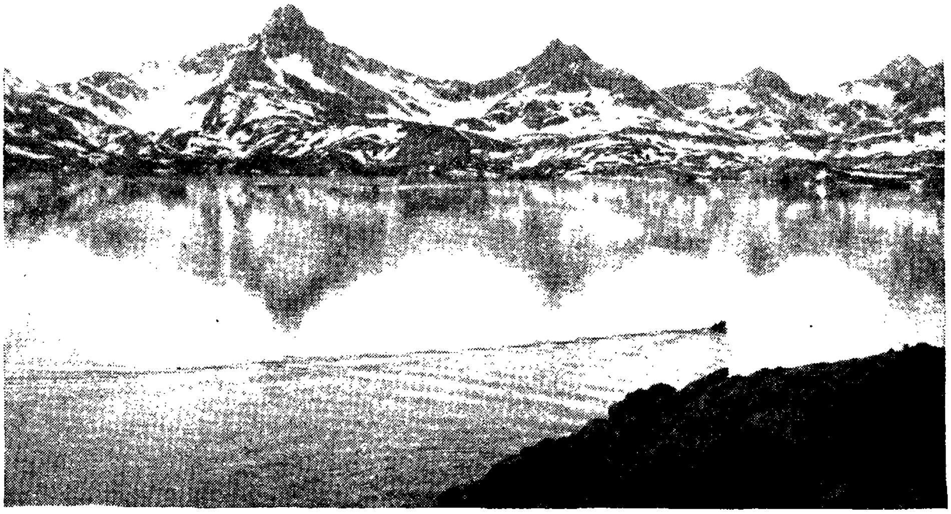
Lieutenants Erwin and Day tell another story, however, and the hero of their account is Doug Labat—flight engineer, gunner, pilot—who practically carried riddled and battered "Old 26" of the Flying Cobras back from its mission over Burma. ☆

PICTURE CREDITS

FRONT COVER, 42, 43: Tech. Sgt. Roger Coster, AIR FORCE Staff; SECOND COVER: for AIR FORCE by Lt. Homer Dean, Wright Field; THIRD and FOURTH COVERS: AIR FORCE Staff; 8: Washington (D. C.) Evening Star; 9: Office of Strategic Services; 24: setting by W & J Sloane, model, Miss Pat Fordyce of John Robert Powers Agency, Photo by AIR FORCE Staff; 35, 36: Cpl. Harry Cowe; 47: New York Daily News; 52, 53: AAF 1st Motion Picture Unit; all other photos from official Army Air Forces sources.

GUIDES ALONG THE ICY AIRWAYS

Life is cold and rugged for our communications men who literally talk the planes across the North Atlantic routes.



By Col. Ivan L. Farman

CO, ARMY AIRWAYS COMMUNICATIONS WING

THE North Atlantic Route, along the great circle from Newfoundland to England, is now the most travelled oceanic airway in the world.

Thousands of big and medium bombers and even a few fighter planes have made the trip one-way, from the factories and training fields of the United States to the bomber bases of England. In addition, there are some thirty big transports running a regular shuttle service between Britain and America. They carry passengers, mail and freight—men on vital military or diplomatic missions, mail and special cargo needed at the front in a hurry.

There have been thousands of crossings, many of them by pilots making their first long over-water hop, and yet more than 98.5 percent of the planes starting out on this run have made their destinations. None of the transports has been lost, and in many cases the crews of combat ships forced down have been rescued.

This record of efficiency has been made possible by well-trained pilots and navigators, excellent equipment, able mechanics and those seldom publicized men—the radio operators and mechanics—of the North Atlantic Airways Communications Area, men who are handling one of the toughest and most necessary details in the Army, living in lonely, storm-swept stations, eating canned and dehydrated foods, with mail call every two or three months if they are lucky, every six months if they are not.

These men of the Army Airways Communication system literally talk the planes across the big hop. There are ground-to-air messages, giving pilots their clearances and instructions, station-to-station communications having to do with the administration of this gigantic airline. In addition, each station collects and broadcasts weather information hourly. In all, the North Atlantic system of the AACS handles six to seven million words a month, enough to fill a couple of shelves at a public library.

By now an entirely new radio communications system, developed in Bell Laboratories in the United States, has been installed. Earlier, both short-wave and long-wave were used. The physical cantankerousness of that part of the world is matched by odd and capricious disturbances of the ether which play hell with radio communication. Short-wave, high-frequency transmission depends upon waves going up and outward, bouncing against the Heaviside Layer around the earth, and ricocheting down to points where the messages are received. This works excellently except in the far north where the Aurora Borealis breaks up the Heaviside Layer, allowing the messages to escape into infinity where they fail to aid anyone. Long, low-frequency waves follow the earth's circumference and are not disturbed by the lack of a retaining wall, but they are subject to static which is present in considerable quantity in Northern area. Long-wave also requires much more power than short-wave.

IT was absolutely necessary that the AACS put stations in the north. The weather of England, France, Germany and the Scandinavian countries is "made" in that section of the Arctic. The data collected there is invaluable. Hourly reports are sent out from small stations, detailing temperature, wind velocity and direction, humidity and aerological information. These reports are collected and analyzed at larger stations, and the combined reports are made available to the AAF, the Navy, other branches of the Army, the RAF, RCAF and the U. S. Weather Bureau. This knowledge of weather, knowing *today* what the sky over Bremen will be like *tomorrow*, has given the Allies many advantages in the air war over Europe.

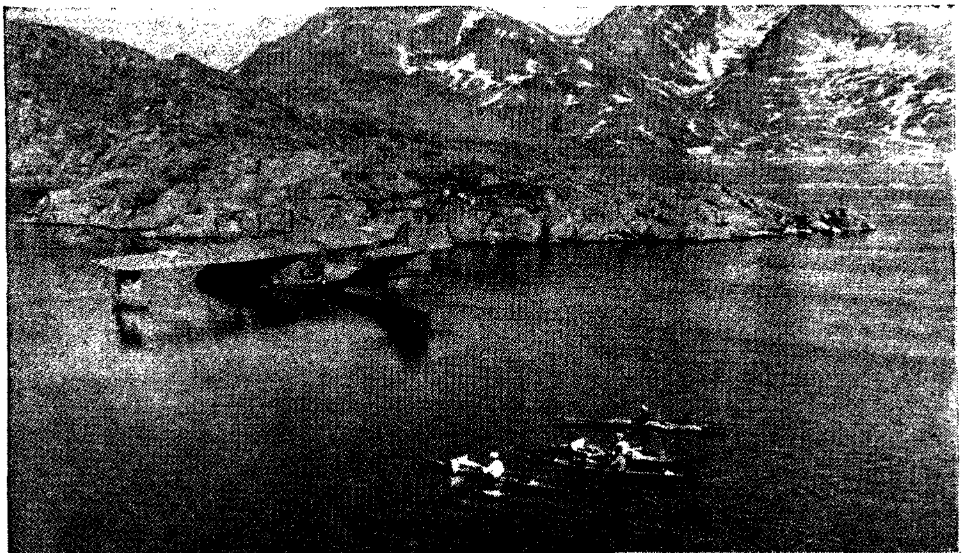
By now most of the 1,400 odd officers and enlisted men who went into the north two years ago to establish the AACS system have been relieved from the grueling detail. A few have remained—those rare fellows who seem to like solitude and bleak wastelands. The rest of them were happy to get away. A few had been holding conversations with seals, and one or two had complained that the mountains were crowding in on them, moving a little closer each day.

The entire system was tough to establish, and it is tough to maintain. The first station was in Labrador. An officer and six enlisted men were flown in and left there. Materials had been brought in the day before, and the seven men were to assemble the equipment—radios, prefabricated buildings and whatever else was needed.

They put the camp together, installed the receiving and transmitting equipment and obtained power from a Canadian company. Before the station went on the air, the Canadian company's power plant burned down, and the men had to make a power plant for themselves. They had one mobile tool, a dilapidated snow plow stuck in first gear, and bound to a speed of five miles an hour.

Later the American officer managed to acquire a jeep. He loaded it into a transport plane, tied it down and tied four enlisted men to the seats. They became the first and only four men to fly a jeep from Maine to Labrador. At the station the Canadian CO took a ride in the jeep, and he was so intrigued that the American officer had some time prying him out of it. The CO finally got out of the little car, and disappeared for three days. On his return he, too, had a jeep, and to this day he hasn't told where he got it.

At one station the communications office



A big flying boat of the type shown and four native kayaks—about the only kind of transportation available in the North Atlantic area.

Ice and rock is about all you see in the North Atlantic. Beautiful until you have to live there.

was an uninsulated metal trailer. The men couldn't wear gloves and it was so cold their hands stuck to the metal equipment. They acquired a kerosene stove. The warm air generated by the stove rose to the ceiling where it condensed and then froze until the ceiling was covered with a thick layer of ice. One day the weather turned warm suddenly, as it sometime does, and the ice on the ceiling melted and rained down on the radio equipment, putting it out of commission for a short time. Any number of small and annoying difficulties arose. There major problems, too. None of the men had been in the north before, one man's experience on an ice truck one summer being the closest thing to arctic work any of them could boast. The men had to learn how to work in that country—and it was tough learning. In all the stations as they were established there were the problems of temperatures below zero, gales that blew down buildings as they were erected, and the bleak wasteland that has a depressing effect on many men.

The Air Transport Command has laid several routes out for the hops to Scotland and other points, some of them with relatively long water hops, and others with fairly short flights over water. The type of airplane, the experience of the pilots and weather conditions usually determine which course a group will take.

There is little flippancy or casual conversation between planes and the ground *in that country*. It is a deadly serious operation, and so many messages are being transmitted at all times that no idle talk is tolerated. Any operator, who wants to expand "Roger" into a few friendly comments about how he's feeling and how the world looks from where he is, is quickly shut up.

The average chat between a plane—called, let us say, R of the Bangtail Group—and a station may run like this:

"Hello, Bangtail R; this is Ford, over."

"Hello, Ford, this is Bangtail R., QRK. Over."

"Hello, Bangtail R. This is Ford. Your signals QRK Five. QRU Nil. Over."

"Hello, Ford. This is Bangtail R. Roger. Thank you. Bangtail R out."

This may take ten or fifteen seconds and there may be many planes coming across that day, and each one, normally, is talked to. Bangtail R may be cleared to a control tower, or he may be going on his way and not stopping. He must be talked to. And then there are the *hourly weather reports and administrative* messages. Some repair parts may be needed on a lonely island, and the message ordering them must go through, or it may be a part needed for a B-17 which made a bad landing at Bluie West One, the designation of one of the big bases up there.

Most of the communications are in code which is changed often. The changing of codes causes difficulty because old ones must be destroyed and new ones delivered to the outposts. Sometimes it is impossible to get to one station, and it will be transmitting in one code while other stations use another, complicating work unduly. But it can't be helped.

There are places which are almost impossible to supply. A crew started out in October, 1942, in Captain Iceberg Smith's SS Belle Isle to establish a certain station. It meant breaking all records by putting a complete station on bare rock in two weeks. They did it. They put up prefabricated warehouses, barracks, an operations shack and a few outbuildings. These had to be guyed down with cables, anchored deep in rock and cement, for the winds in that barren part of the world hit 120 to 140 miles an hour at times.

Once all the buildings were up and three transmitters and six receivers in operation, an AACS crew was left with supplies for a year, and Captain Smith put out to sea with the SS Belle Isle. The captain, a weatherbeaten old man who has been in the north longer than anyone cares to remember, knows that section of the Arctic as well as a blind man knows his room. When he pointed the Belle Isle away from the station, he saw that the ice pack was already closing in. He kept on out to sea anyway, and he was probably the only man who could have made it with a ship the size of the Belle Isle. Navy escort vessels went ahead of the Belle Isle, nudging the floes and icebergs, and the big steamship followed behind. The ice pack, almost as though it were alive, moved in on the ships as the men watched helplessly from shore. It took Captain Smith's ship and the Navy boats 48 hours to go ten miles out of the harbor into clear water. When they looked back at the base, it was hemmed in by ice, cut off from the world.

The next stop was in a harbor too shallow for the Belle Isle to anchor in close to land, but the hardy, tough fellows of the AACS went ashore in long boats. The Belle Isle stood out in open water, tossed about by screaming winds and high, cold seas. The men took supplies, prefabricated houses, equipment to shore in lighters. These craft could stand only a few trips before they were wrecked by the buffeting from water and rock. The men who were to build the station huddled in the shelter of crates. The Belle Isle was running short of fuel and had to sail away. She couldn't wait until the men had built their houses and sheds.

Twelve hours after the ship left, a blizzard struck. During the five days it lasted the men could not keep a fire in their stoves because the terrific wind created drafts which sucked the fires, coals and all, out of the chimney.

The Belle Isle weathered the storm into a base, refueled and returned to the station. The wind died down to a gale, and the Belle Isle, standing well out from the shore because of the winds, tried to send in additional supplies to the men marooned on the rocky shore. Fuel, particularly, was needed for the station couldn't operate nor could the men get through the winter without it. Captain Smith tried to use a motor launch, but the high seas capsized it. He wirelessed headquarters of his predicament and a Coast Guard boat with tenders was dispatched. The seas were too much for the Coast Guard craft. Finally there came a break. The wind died down one afternoon and, in a few hours, with men on ship and men on shore working at terrific speed, everything was unloaded. The Belle Isle sailed away, and the men on shore were too busy piling and shoring their supplies to even wave good-bye. They were there for the next year.

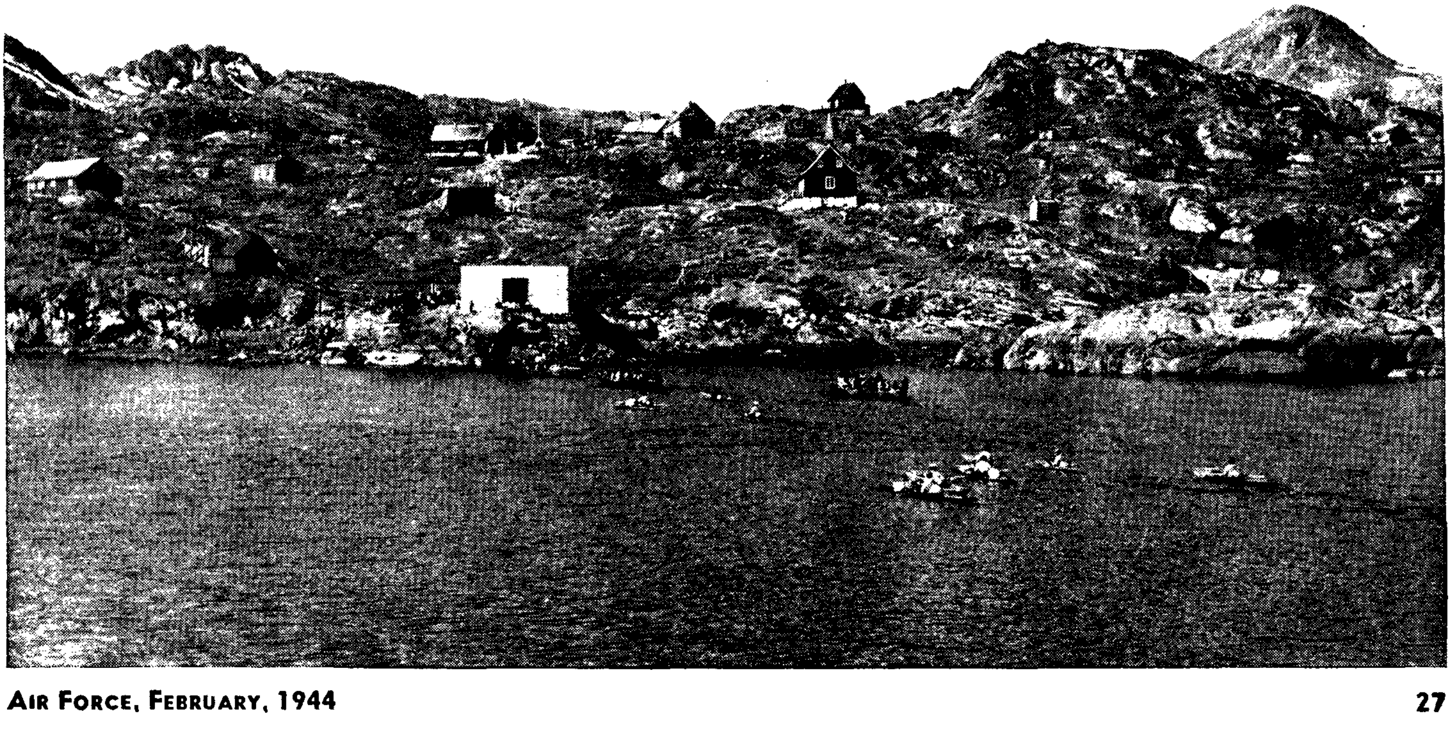
THAT'S the routine life for AACS men in the north country. All work outside is back-breaking, and the work inside with the radio instruments and weather recording machines is deadly monotonous. Seven or eight men may be isolated for eight and ten months, and in that time they understandably get completely fed up with their companions. When the stations were first installed there were little or no comforts. There was little fuel, and most of it went to power the wireless equipment. Little of it could be used for light or to keep the men warm.

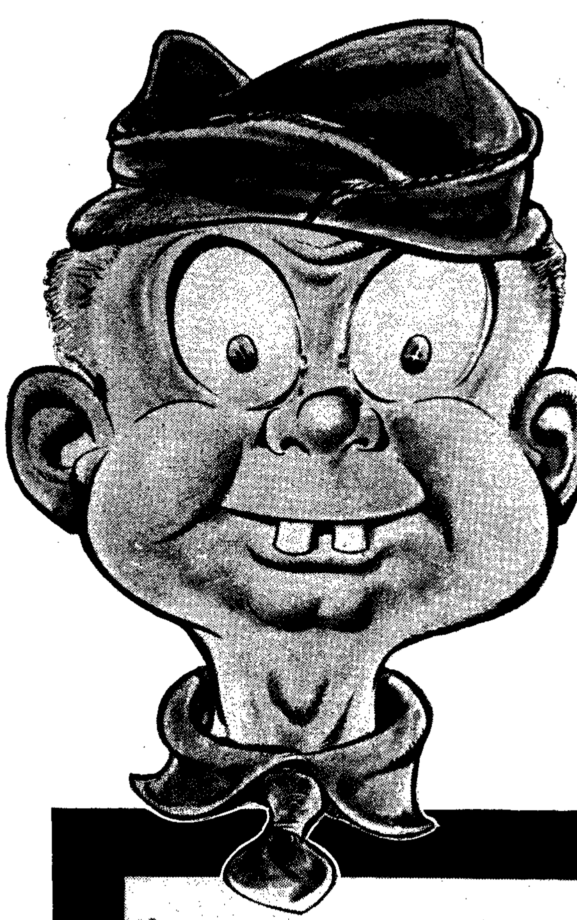
One unit in Greenland unpacked a piece of radio equipment they needed. Everything was there, everything fitted, except there were no screws or nuts. Instead there were instructions stating that the small screws needed were of a standard size and "may be purchased at any local hardware store." The nearest local store of any kind was 3,000 miles away. At another location the men, oddly enough, had a pinball machine for their barracks, but only part of the remote control system for their radio. One of the men took the pinball machine apart and used the insides to rig a control system. Many outfits use coke and beer bottles for insulators. When things break down, the men often have to *make* the repair parts needed. They have to take care of themselves when they are sick, do their own cooking, and lead a primitive life while surrounded with fantastically intricate, delicate machinery, and not one luxury of this modern age.

Of late they have had more fuel, and they are relatively warm. They have lights for reading, but it is still a grind, as the men who have gone out there as replacements well know. Sometimes they have to hang up an antenna in a seventy-mile gale, or lash down an instrument shed in the same kind of weather. At one place the snow is so deep that the only way the men can leave their shack is through a hole in the roof. They reach their extremely primitive latrine through a tunnel of ice.

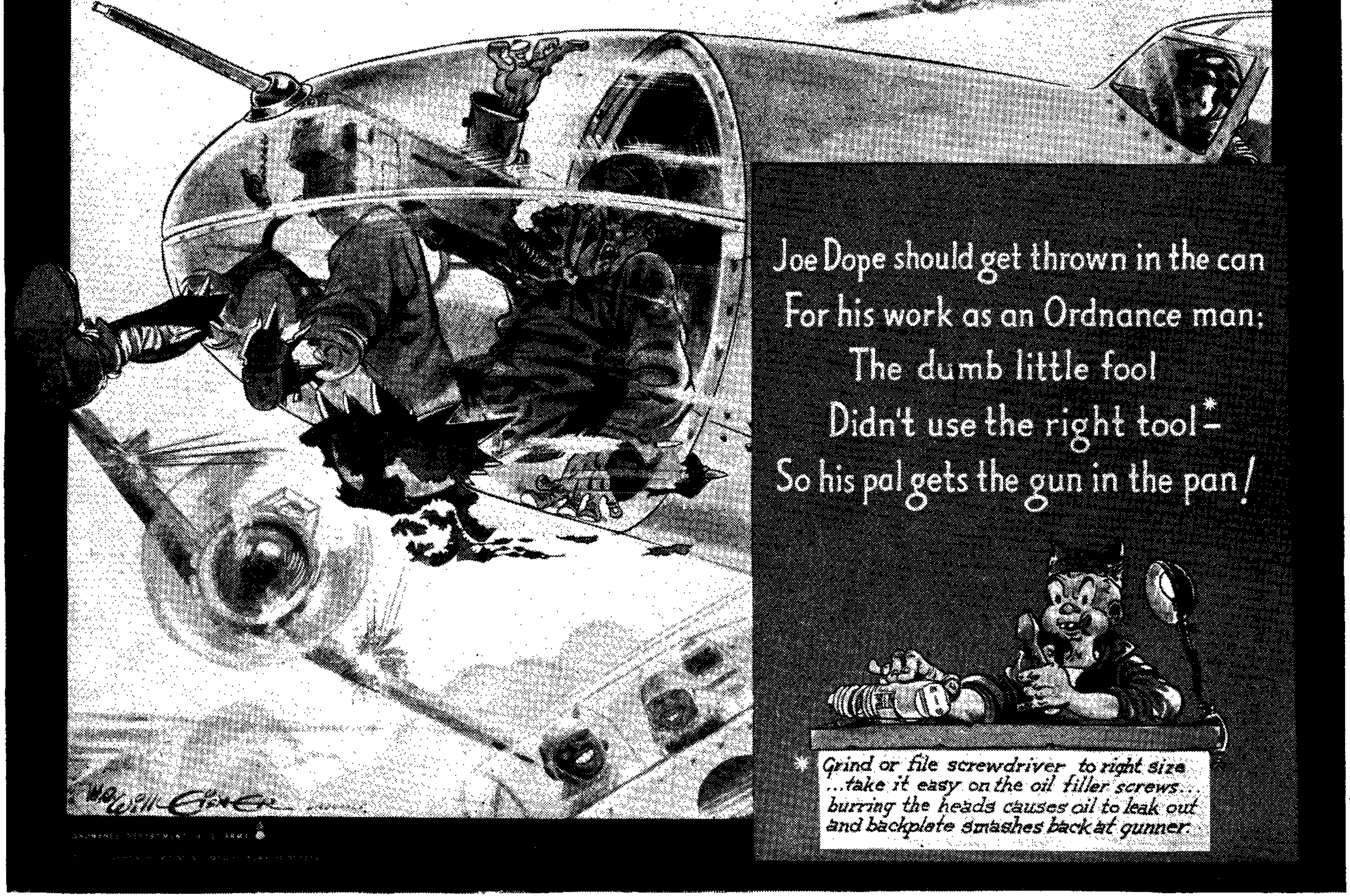
The officers directing the system think every man who lives through months at a station out there is a hero. The work is hard, unglamorous, and the bleakness, wind and cold of those isolated outposts is hard for some to withstand. These men have been doing it, and the big transports, the bombers, carriers and heavy fighters have been getting to the battlefronts, nursed and talked over the hop by men living in incredible hardship so that we can win this war. ☆

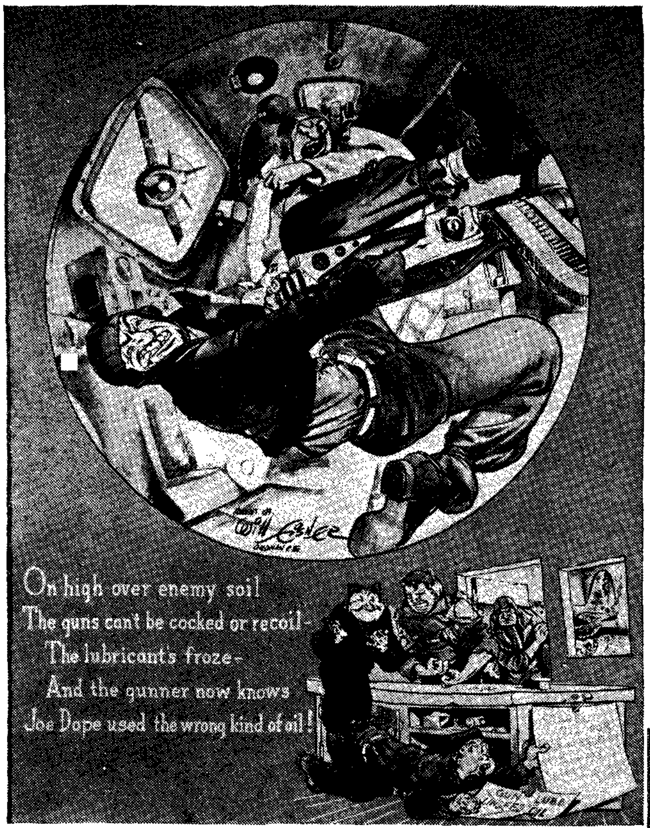
In the winter, the buildings at this Army Airways Communications station will be covered by snow, and winds may go about a hundred miles an hour. AACS men stay at the posts, though, and nurse the planes across the North Atlantic hop. It's a vitally necessary, tedious job.

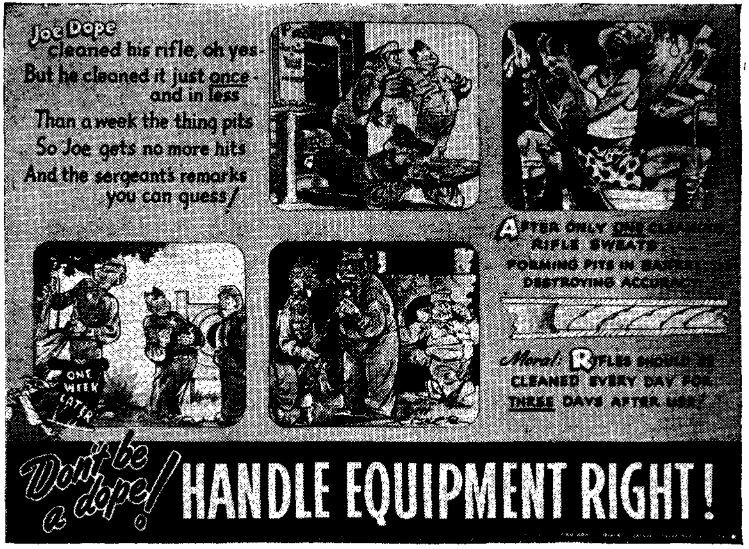




He was created by the Air Ordnance Office, Air Staff, to point out the negligence factors which too often render combat ordnance items unserviceable in the field. A few of the "JOE DOPE" ordnance posters which have been distributed to the field are reproduced here. A series of eight posters is available upon request to the Air Ordnance Office, Headquarters, Army Air Forces.

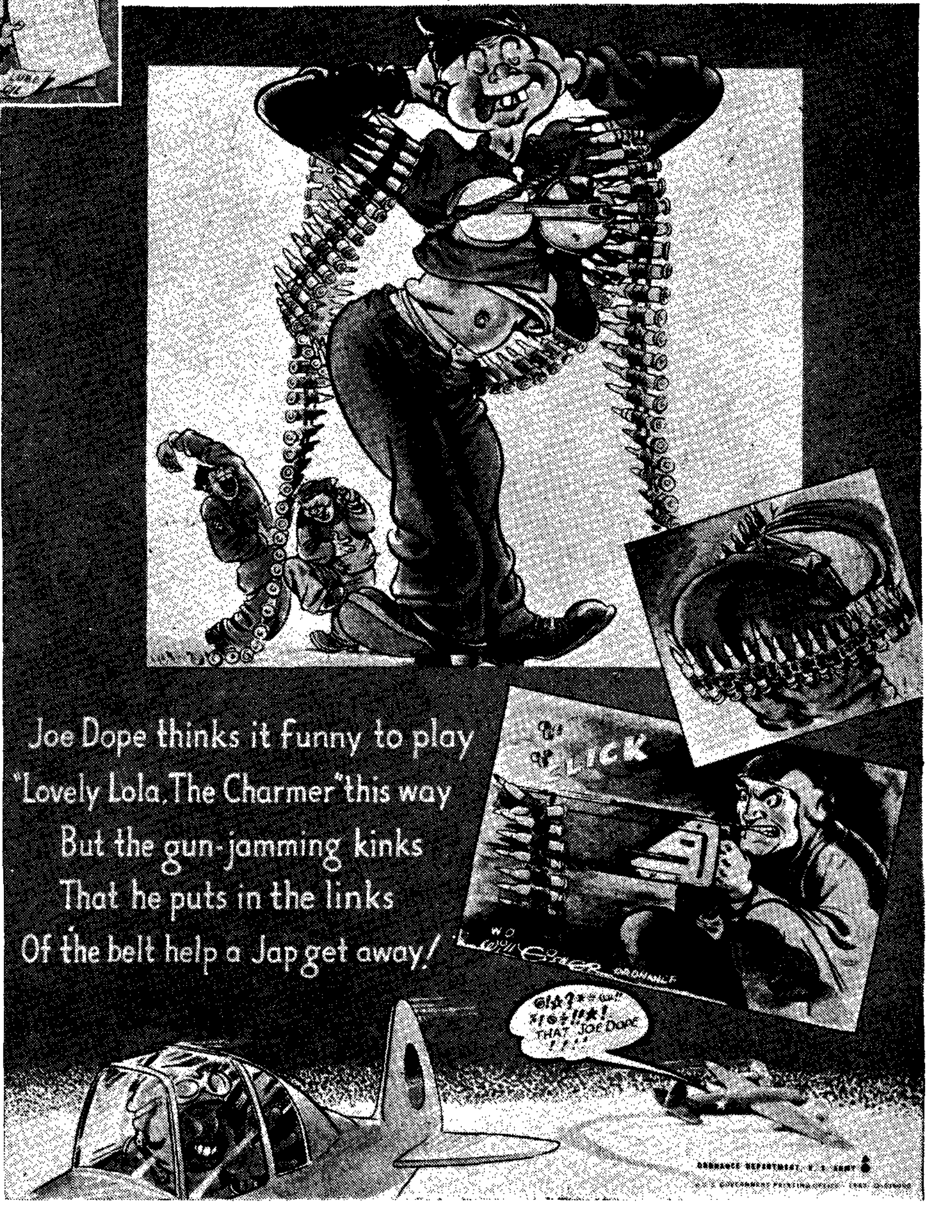

Joe Dope should get thrown in the can
For his work as an Ordnance man;
The dumb little fool
Didn't use the right tool*–
So his pal gets the gun in the pan!
* Grind or file screwdriver to right size ...take it easy on the oil filler screws... burring the heads causes oil to leak out and backplate smashes back at gunner.
Will Eisner
ORDNANCE DEPARTMENT U S ARMY


On high over enemy soil
The guns can't be cocked or recoil-
The lubricant's froze-
And the gunner now knows
Joe Dope used the wrong kind of oil!
Will Eisner

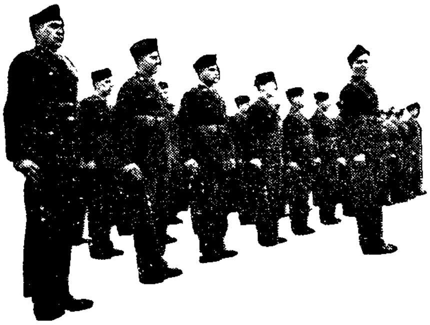

Joe Dope cleaned his rifle, oh yes-
But he cleaned it just once - and in less
Than a week the thing pits
So Joe gets no more hits
And the sergeant's remarks you can guess!
ONE WEEK LATER
AFTER ONLY ONE CLEANING RIFLE SWEATS, FORMING PITS IN BARREL, DESTROYING ACCURACY
Moral: RIFLES SHOULD BE CLEANED EVERY DAY FOR THREE DAYS AFTER USE!
Don't be a dope! HANDLE EQUIPMENT RIGHT!

Joe always looks like a jerk on the loose, and he hasn't done a thing right since the Battle of Antietam. However, he talks good. He may act like a simpleton, but the advice he hands out is solid. He's an example of "Don't do as I do; do as I say."

The American soldier, well equipped and efficiently trained, can do his job in this world fracas only if his equipment receives proper maintenance. Joe Dope, the ordnance dogface about whom even the dogs complain, is doing his job in his own little way. The advice Joe's antics represent is good, but his work around the planes frequently is little short of sabotage. Joe is a simpleton who hears it incorrectly and does it worse. The flight surgeons say he is hard-of-thinking and his Form 20 is a constant source of merriment around the orderly room. But there's a funny thing about Joe. Although he snaffs up everything he tries to do, his advice is always good. He is a sort of horrified technical manual. Proof that the American soldier is a very sensible individual is seen in the fact that he came through the hard fought African campaign with the same equipment with which the operational movements began. And while Joe can't claim credit for this remarkable maintenance, the fact remains that Joe is on very sound ground when he says that preventive maintenance pays off like three black bars—twenty-one plus the jackpot. Consequently, Joe Dope is for it. In fact, Joe is a case of "Don't do as I do, but do as I say." At best, maintenance is an unglamorous job, and the importance of his activities has placed a mighty chore upon the aviation ordnance man. The only feasible solution is preventive maintenance of a standard that keeps ordnance in good working order over a longer period of sustained air operations.


Joe Dope thinks it funny to play
"Lovely Lola, The Charmer" this way
But the gun-jamming kinks
That he puts in the links
Of the belt help a Jap get away!
FLICK
WO Will Eisner ORDNANCE
THAT JOE DOPE
ORDNANCE DEPARTMENT, U. S. ARMY

PREPARE FOR INSPECTION



TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative ☆ Technical
Communication Tactical

[illegible]

▶ *From Typewriters to Teletypewriters:* Improvising begins "at home," not on the field of battle.

Communication inspectors report that they have observed teletypewriter training "proceeding on schedule" in newly activated organizations, although authorized teletypewriter equipment was lacking. The men are learning procedure by sending "canned" messages and replies on typewriters. Following this stage, the training is carried on through the cooperation of the base signal officer. The neophyte operators practice on the teletypewriters of the base signal office during "off hours." Once they have become proficient, they help the base by taking shifts on the teletypewriter net, and help themselves to some good training. When they receive their own equipment they are expert operators and can carry on without missing a key.

▶ *Previews of Training Films:* Tactical inspectors who have observed training films in use at bases have particular commendation for the instructors who have thoroughly studied the films before showing them. Instructors familiar with the contents of a film are able to emphasize particular points or elaborate on them.

▶ *Field X-Ray Machines:* Here's a tip from overseas to medical officers in service groups which are training in the United States: You cannot pay too much attention to training with your field X-ray machines. Those machines have proved to be of immense value in every theatre of operations.

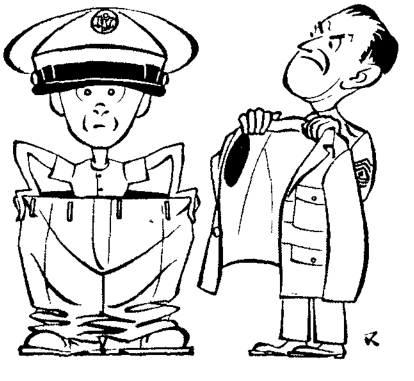
A medical officer returning from overseas reported watching group personnel using the machines to find pieces of lead in wounded flyers. The machines did the job quickly, efficiently, because the medical men had been thoroughly trained in their use.

▶ *Coolant Line Maintenance:* Technical inspectors are stressing the importance of frequent checks of rubber hose connections on the coolant lines of aircraft engines. Numerous leaks originating from the connections have been traced to faulty maintenance.

▶ *Take Another Look at Forms 81:* Attention, commanding officers of organizations under orders for overseas movement: This is to remind you that organizational designations must not be on WD MD Forms 81 (Immunization Registers) to comply with the security provisions of Par. 3ia, Sec. VII, POM. Organizations, generally, are promptly removing or effectively obliterating unit organizational designations, markings, insignia, badges and the like from uniforms, other clothing, baggage, property and equipment, but POM inspectors report that they have found numerous cases in which the unit designation was still carried on Forms 81.

▶ *Right Size or Else:* If that soldier going overseas is a perfect 36, and all you have on the shelf is a Size 40 in herringbone twill, sergeant, just leave it on the shelf. Here is what happens if you don't:

The soldier gets his serial number stamped on the herringbone twill, which makes him look like Omar the Tentmaker in one of his own creations. The soldier doesn't wear the Size 40 because he is afraid of becoming lost in it and, accordingly, he stows it away in his barracks bag. There the Size 40 stays until an inspector notes it at a showdown inspection, and it is turned in. However, it has the soldier's serial number on it and, as a second-hand garment, becomes Class B clothing. It will eventually be worn out by a big fellow in this country, but it should never have been issued in the first place.



That goes for other items of clothing—shoes, pants, shirts, etc. If the right size cannot be supplied at the home station, the article in question should be listed as a shortage. (Sec. II, WD Cir. 259, 1943.)

▶ *Easy on Those De-icer Boots:* Here are short cuts that are cutting short the life of de-icer boots of inboard wings:

Some mechanics are dragging fuel hoses across the de-icer boots and damaging them beyond repair. Others are climbing over the leading edge of the wing and doing damage that only makes an ex-paperhanger happy. Take a little more care and cut out the phoney short cuts.

▶ *Filter Maintenance:* From the fighting fronts comes information that lack of proper maintenance on air intake manifold filters is causing numerous engine failures. Some of these failures have occurred after as little as two hours' use. Maintenance men should check TO 01-1-23 and follow its directives on filter maintenance to keep those engines purring.

▶ *Bombs: Handle With Care:* Because it is so important to all men in the Army Air Forces who handle bombs, we are going to pass on some information contained in an article in the October, 1943, issue of *The Ordnance Sergeant*.

Four major reasons advanced in the article for disastrous bomb accidents are:

Rough handling of fuzed bombs, causing the fuze to strike against some object.

Use of oversized slings in hoisting bombs.

Failure to inspect fuze cavities before fuzing.

Rough handling of bomb bodies in shipping and in delivery to landing strips. (Rapid starting and stopping of bomb lift trucks with fuzed bombs on platforms or cradles has caused accidents. This applies also to the use of bomb lift trucks in bomb handling without using platforms.)

The article points out that "repeated handling of bombs and fuzes will always lead to short cut methods, but violation of basic safety principles is never authorized." Practice in correct procedure until it becomes a habit is the No. One method for assuring safety.

▶ *Getting Those Special Orders Right:* Special order clerks in headquarters have a tough job. The sergeant major is forever breathing heavily over the left shoulder of a clerk and saying, "Hurry up with those orders." Speed is paramount, but if the orders are not right, both the clerk and the sergeant major have been wasting their time—and the time of others who must see that the orders are corrected.

A report from the commanding officer of an airport of embarkation points out that air crews have been arriving with numerous errors in their special orders—misspelled names, wrong serial numbers and the like. Before any orders are released, they should be checked carefully against records or with the individuals concerned.

Another factor that has caused delay is the practice of placing the special orders among the personnel records, and then hunting all over the place to find them. The orders should be placed in a special envelope and carried separately.

▶ *Radio Mechanics and Tech Orders:* We know a radio mechanic who carries a copy of Robert W. Service's poems with him at all times. He will recite "The Shooting of Dan McGrew" at the drop of a GI hat. But if you ask him what TO 08-10-50 states in regard to making a pre-flight inspection of his SCR-274N radio equipment, his face suddenly gets a blank look.

No one expects him to recite a Technical Order in the manner of a Service poem, but he should be thoroughly familiar with the TOs pertaining to the equipment he operates. TOs look impressive—and sometimes forbidding—when stacked in long rows on a shelf. They are doing no one any good, however, until they are taken off the shelf, and the information they contain is put into practice. This fact, incidentally, doesn't apply only to radio mechanics.

▶ *Oil + Heat = Expansion:* Oil expands when hot. That's a fundamental fact, but technical inspectors tell us that some maintenance men are forgetting it. Planes are being needlessly grounded because of too much oil in the systems. In one particularly bad case, two gallons of oil had run into the belly of the ship, and it was necessary to remove the radio to clean off the oil. So when you start pouring in the oil, just remember your high school physics which told you all about heat expansion. ☆

INSPECTING THE INSPECTOR

Does headquarters have a good follow-up system? On correspondence? Pending projects? Directives? Complaints? Irregularities and Deficiencies?

Again, we remind you—are you checking to see that everything possible is being done to save on rubber tires?

Do you know if the budget and fiscal officer at your station is carefully scrutinizing all proposals for procurement to assure that quantities are reasonable and that procurements are proper charge against the funds available? Are procurements which are deemed improper called to the attention of the commanding officer? (AAF Memo. 30-7, 22 October 1943).

Has the firing range been inspected recently? Is it being given maximum usage in the minimum of time? Is the range officer well qualified for his job?

Do you know whether commanding officers are taking action to insure that the men of their commands are fully informed as to the availability and advantages of the Soldiers' Deposit System? (Sec. IV, WD Cir. 169, 1943.)

HERE ARE THE ANSWERS

Q. ***When will an individual's illness be recorded in the Morning Report?***

A. It will be recorded only when such illness involves a change in duty status. (Ch. 1, AR 345-400, 29 July 1943.)

☆

Q. ***Do flight officers wear the commissioned officers' service cap insignia?***

A. No. They wear the warrant officers' cap insignia, an eagle rising with wings displayed standing on a bundle of two arrows, all inclosed in a wreath. (AAF Memo 35-32, 25 October 1943.)

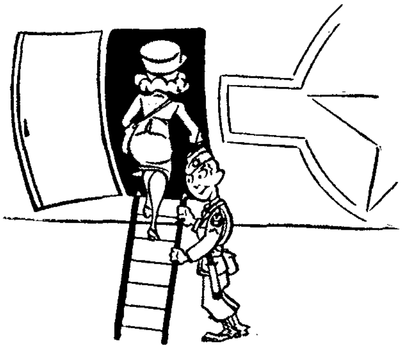
☆

Q. ***Does Change 24, Par. 9b, 25 June 1943, AR 600-35, mean that the officer's overcoat, wool, long, can no longer be worn?***

A. No. The long overcoat will no longer be procured as an article of uniform, but whenever changes in design or material of uniforms are made, the old style may be continued to be worn as authorized in AR 600-40. (Par. 1c, AR 600-35.)

Q. ***May civilian guards be hired for aircraft grounded in a locality where military personnel are not available?***

A. When on authorized cross-country flights, landings are made at points where no federal, state or municipal protection facilities are available and when the provisions of AR 95-120 are not applicable, civilian guards or watchmen may be hired to protect government property provided that no enlisted personnel eligible for guard duty are present. Amounts paid to guards will be at the rate paid for similar services in the vicinity. Pilots hiring guards will secure certified bills in quadruplicate. (Ch. 1, Par. 8, AR 35-6300, 2 June 1943.)



Q. ***May WACs be detailed to duties requiring participation in aerial flights in Army aircraft?***

A. Yes. Individuals having command jurisdiction over members of the Women's Army Corps are authorized to detail such members to duties requiring participation in aerial flights in Army aircraft. WACs on duty with the AAF will not be detailed to flying duties with combat units of the AAF, nor will they be detailed to a course of training involving regular and frequent flights in aircraft embraced in the category of combat training. (AAF Reg. 35-45, 12 November 1943.)

☆

Q. ***Are GI movies exempted from property accountability?***

A. Yes. They are exempted from property accountability under the provisions of Par. 3c, AR 35-6520. Appropriate and adequate records on the distribution of such films will be maintained by the organizations distributing the films. (Sec. IV, WD Cir. 278, 1943.)

☆

Q. ***Must qualification in arms of an enlisted man be entered in his Service Record even though it does not affect his pay?***

A. Yes. The rating of each enlisted man will be entered in the Service Record as well as on WD, AGO Form 20 (Soldier's Qualification Card). (Sec. II, WD Cir. 265, 1943.)

Mascots OF THE AAF

Tex and Scotty, whose masters handle P-47s for the 8th Fighter Command, come through with their best camera mugging. From their angle those parachutes could have been done up in Scottish plaid, with perhaps a kilt or so hung over the guns.

Only the weary crew members of a bomber just returned from a tough mission know what it means to find good old Rover, their mascot, meeting the plane with his tail wagging and welcome written all over his face. In AAF units all over the world, the mascot—whether he be goonie or goat—is somehow tied up with the pep and spirit of his organization. Now and then, just for luck, a mascot flies a mission with his boys; now and then, when luck is not so good, the name of Abner the Aardvark or Stanley the Squirrel will appear on the list of the missing. These mascots have become almost as much a part of life in the AAF as the planes their masters keep in the air.

When Flopper, on hand for the "mountain climb" event in the Alaskan Olympics, saw Sgt. Jess Horn of his outfit come puffing down the stretch on top, he just couldn't resist showing his elation with a lick on the sergeant's leg.

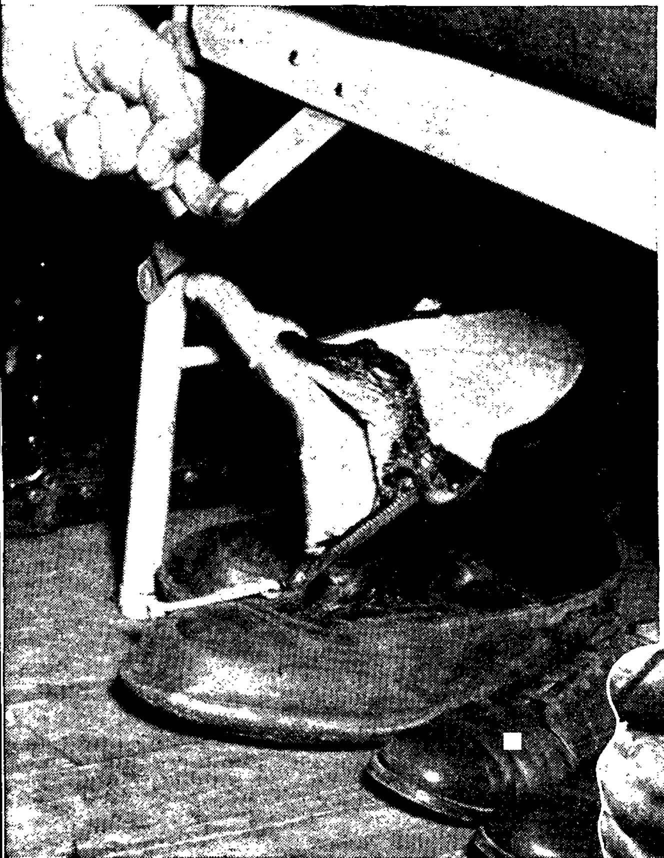
"So long, boss."

"Take good care of yourself!"

This is one helluva place to raise a family, sandwiched in between a stack of bombs and an empty beer bottle, but this mother goonie, whose first name we didn't catch, can't be too choosy on Midway, these days.

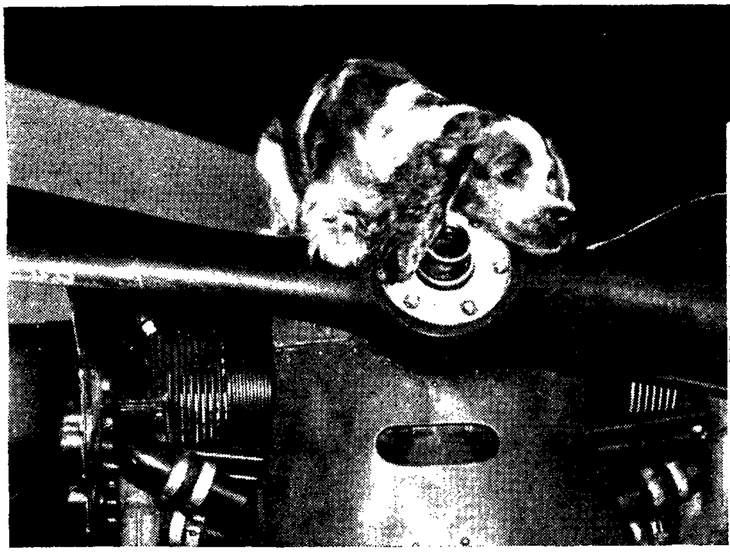
Dogs and monkeys are by far the most widely adopted mascots in the AAF. Here we give you two monkeys. Get a load of how Junior (see him in the plate?) goes for his GI tidbits. His elder is a little more choosy, prefers hand-feeding.

It's a little uncomfortable to stick your foot into a flight boot and find it already occupied by a baby alligator but when the baby is mascot Benny you can expect almost anything. Benny takes great delight in having his stomach scratched. His weekly ration is a teaspoonful of ground meat; incidentally, his life expectancy is 307 years.



This would be Minnie the Moocher who insists on seeing that everything's all right with Lieut. Joe Egan before he takes off from a base somewhere in England. Minnie is probably the only "mouse" going who can afford to get so chummy with a pilot in his business suit.

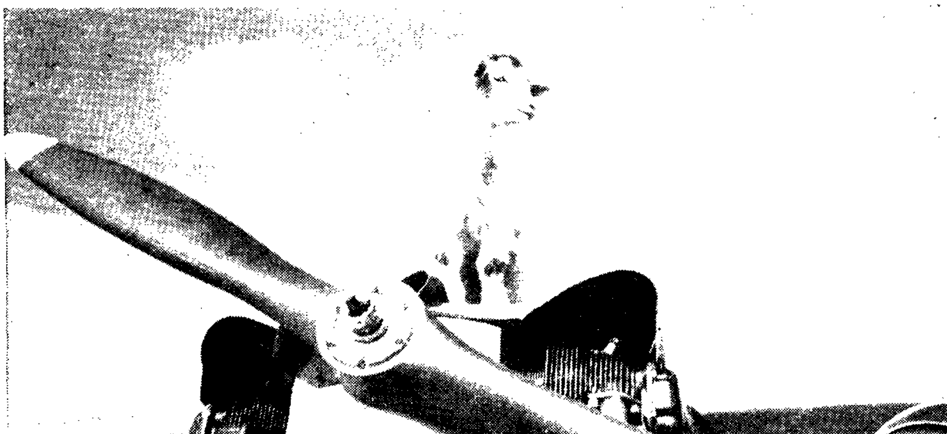
(Continued on Next Page)



"It's humiliatin', that's what it is. Just plain humiliatin'. Here I make the hop to England in a four-engine job, they give me the monicker 'Trans-Atlantic Topper,' and now, just like that, I'm back in Primary!"

The pilots of a 6th Air Force fighter squadron who submitted this photo from the Caribbean area would like you to believe that Willie the 'Coon is giving final instructions to the ground crew before a take-off. With a touch of naiveté, we will assume that the boys have picked up a smattering of raccoonese and chalk up the pictured event as another service mascots are nobly rendering the AAF around the world.

Why is it that most goats with four legs are known as "Billy the Kid"? So it is with this young fellow who is attached—and definitely—to an outfit in North Africa. And since the most intriguing phenomenon of the goat is his gastronomics, it is interesting to note that although this Billy eats almost anything, he considers cigarettes his favorite delicacy.



Raunchy Jack is a talking jackdaw attached to an 8th Air Force fighter squadron. We would like to tell you that Raunchy keeps up a running conversation with his boys, gabbering over politics and aircraft box scores, but actually his vocabulary to date consists of an almost inaudible "hello" and an even more dubious "good-bye." But his tutors have high hopes.

THOSE SCREAMING INVADERS

By Sgt. Arthur W. Everett, Jr.

12TH AIR FORCE

Our A-36s in Italy are making the Germans wish they had never heard of dive-bombing.

AMERICAN A-36 Invader pilots, after five months of operation in the Mediterranean theatre, are making the Germans wish they'd never heard of dive-bombing.

Their close support in pounding German positions has softened the task of advancing Allied ground forces from Sicily up the Italian boot.

At Troina in Sicily they blasted into submission a battery of Nazi 88 mm guns and enabled our ground forces to take that strategic town. It was one of the decisive battles of the Sicilian campaign.

Later when American ground troops were scheduled to move against two well-defended heights in the center of the enemy line in Italy, the Invaders sent waves of planes over the area every ten minutes until the hills were pockmarked with bomb craters. They dive-bombed only a few hundred feet ahead of American lines but not an Allied soldier was singed and the Germans were forced to draw back leaving the battered area to our troops.

These are only two of many examples of the split-second timing and dead-center accuracy that is the trademark of the A-36 groups operating under Maj. Gen. Edwin J. House's command.

It's difficult to separate the Invader pilot from his plane. He's inclined to give all the credit for his exploits to the aircraft itself. That's not quite true. No plane is any greater than the pilot who flies it.

The A-36 fighter-bomber carries 500-pound bombs. It travels fastest at medium altitude where it can weave and twist along through heavy flak. Near the target the pilot pulls the plane up several thousand feet, rolls it lazily over on its back, pulls back on the stick and sends the plane screaming down in a vertical dive on the target. He drops his bombs after a dive of several thousand feet. Like grey teardrops they drip off the nose of the A-36 and fall straight down ahead of the ship. The pilot begins to coax the ship out of its dive while it's traveling at about 375 mph straight down. As he eases back on the stick his eyes bug out, his cheeks feel like they're being drawn down to his knees, and his stomach acts like it's going right through the floor of the cockpit. But there's seldom any black-out and, after about 1,500 feet of dive, the A-36 straightens out.

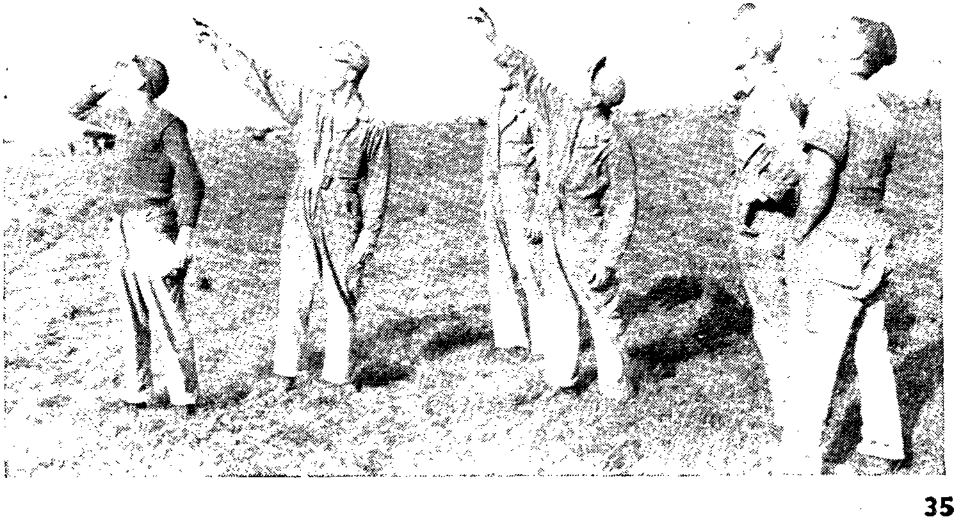
IT is impossible to describe the terror this plane strikes in the hearts of enemy troops beneath it. Its shrill scream is louder and more eerie than the German Stuka's. It plunges down through three levels of flak straight at you and there's no way in the world to dodge it on the ground. Italian troops captured in Sicily after being heavily bombed by A-36s were so shaken they were actually hysterical. They wept and moaned of the "screaming hell-divers," their own nickname for the fighter-bomber.

Once the Invader drops its bombs it becomes a low-level strafing plane. Its six 50 caliber machine guns are deadly when the plane skims along enemy roads at tree-top level. German trucks by the hundreds litter roads in Sicily and Italy, twisted monuments to the effectiveness of these strafers.

Because you never know what you'll hit, this low-level work is the toughest of all. On one mission Lieut. Col. Dorr E. Newton, San Antonio, Texas, commander of one A-36 group, ran smack into a high tension wire that had escaped his notice as he winged along. But he lived to tell about it.

Not so fortunate was one youngster in Italy. His flight of four Invaders moved in to strafe an innocent-appearing string

The planes in the air are coming home after a job over Italy. On the ground a group of crew chiefs are counting and sweating it out. Those are their planes up there, and they want them all back.



Lieut. Walter L. Gibson, pilot, gets buttoned up by the assistant crew chief, Sgt. Paul S. Goldman, just before taking off on a mission above Rome. It's a long haul in a fast, tough plane.

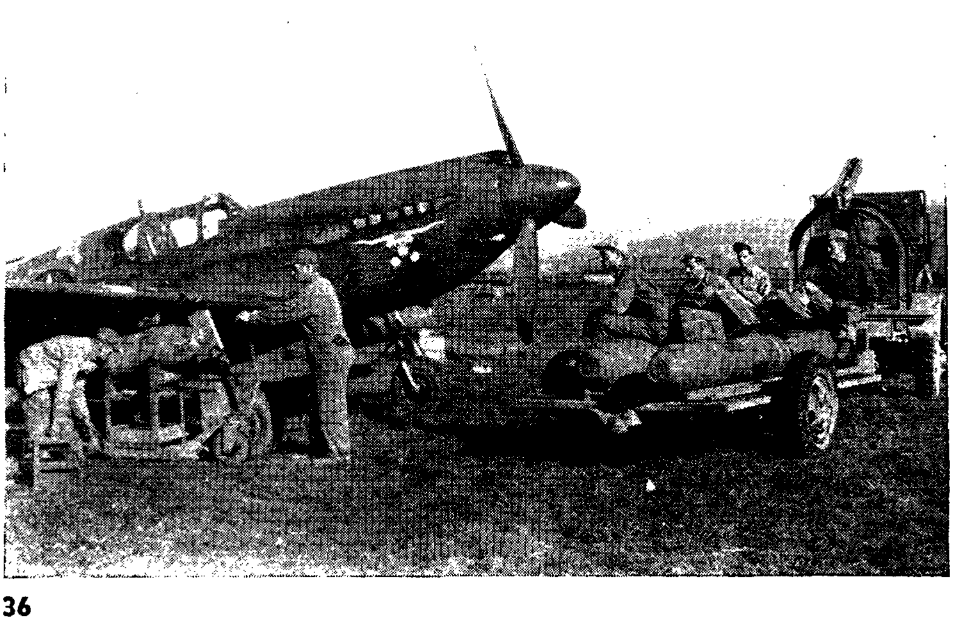
of forty enemy box cars on a rail siding. He turned his guns on them and the whole earth for thousands of feet around literally blew straight up in the air. The train was loaded with munitions. The pilot was blown up with his plane and his flight comrades, one of them over a mile away from the last, narrowly missed a similar fate. Their planes were twisted and peppered with holes. The three of them managed to limp home.

Another pilot strafed a German dump in Italy early in the campaign. It, too, was chock full of munitions and they went off together. The pilot managed to crawl out of his burning plane and landed safely in the sea a few miles away. He was back in the air the next day.

The men who man the Invaders are not, strictly speaking, fighter pilots. Their job is to get in there and bomb or strafe and then get out and home again. But they can fight if they have to. During the desperate days on the Salerno beachheads they rushed the Invaders in from Sicily to fly patrol above our troops. They did such a good job on this unfamiliar task that they drew the unstinting admiration of American Spitfire pilots to whom combat is an old, familiar story. They shot down a dozen or more of the Luftwaffe's best fighter planes in three days. And they didn't lose a single A-36 to the enemy in the air.

PHOTOGRAPHS BY CPL. HARRY COWE

Bombing up. The cart was the idea of Lieut. James Collins. Pfc. George E. Rodgers lines up the bomb beneath the bomb rack, and Cpl. Richard Paige is backing the bomb cart into position. At the right are the bomb service truck and trailer with bombing crews aboard. They'll soon be laying those bombs down on German positions in Italy.



INVADER pilots age fast. They are young—all pilots are. The average age is about 23. They haven't the cockiness of a Spitfire pilot, the suave nonchalance of the P-40 fighter. But they have an esprit de corps that's incomparable. They're intensely proud of the ship they fly and the job they do. Many of them now have upwards of sixty missions to their credit. That's a lot of combat and it can't help but age a man. They've been pounding the Germans ever since they went into combat last June over Pantelleria.

One group, headed by Lieut. Col. Robert C. Paul, of Lake City, Fla., has been plugging away at Germany's Hermann Goering division ever since the landings in Sicily. Members of this group know each other intimately by now. The Germans are constantly trying new ruses to conceal their heavy flak guns and bag the A-36s. The Invaders are just as intent on devising new ways of sneaking down on the enemy troops and blasting more of their men and equipment to bits.

The A-36 groups operate close to the front lines. In fact they love to play host to visitors who don't realize this fact. You can stand in front of their operations tent and watch a flight of the square-winged, square-tailed 36s take off. A few minutes later an officer will hold up a hand for silence. Sure enough you can hear the thump of their exploding bombs on German territory only a few miles away. A few minutes later they're back on the ground, piling into a jeep headed for interrogation at the Intelligence tent.

The pilots named the A-36 themselves. Probably they're the first flyers to do so. It happened this way:

Back in Africa when they first entered combat the news releases referred to the planes as Mustangs, or P-51 fighter-bombers. That irked the boys. True their ship is a Mustang converted into a dive-bomber. But they felt their work was such that they were entitled to some distinction from the P-51 fighter pilot. Sitting around a tent on a dusty Cap Bon airfield one day they were trying to pick a name for their ship. After several failures, Lieut. Robert Walsh spoke up: "What's the matter with calling it the Invader? They're using us right now to invade Sicily. Some day not so long from now we'll be invading Europe." The others agreed. Since then the name has caught on and has received official sanction. The plane has lived up to its name. ☆

WOMEN IN THE AAF:

THE CADET WIVES LEAGUE

AIR FORCE wives who follow their husbands through training from field to field find upon arrival at any station in the Western Flying Training Command that their biggest problems have been met for them by an organization known as the Cadet Wives League.

Finding a place to live in crowded Army areas is headache No. One. Then come the search for a job and the problems of finding medical assistance when needed and locating congenial friends with whom to share the long days while waiting to see cadet husbands for a few precious hours each week. The league takes ready care of such matters. By working closely with the USO, YWCA, hotel and housing agencies, each local league headquarters is able to assure new arrivals suitable living accommodations almost immediately.

The employment situation has been neatly solved. Most of the cadet wives arriving at Santa Ana want to keep busy by working in their spare time. Positions are available but the employer in most cases is not willing to accept a cadet wife knowing that she will leave the job as soon as her husband goes to his next station. The league's assurance to the employer that a replacement will be provided to keep the position occupied has helped to overcome this problem.

Through coordination with Special Services, the league has been able to set up a plan whereby a cadet wife who so desires may obtain a position at the station to which her husband is assigned and upon his transfer to a new station, obtain employment at that station by making application to the Special Services officer. This arrangement not only has provided cadet wives with employment and the opportunity to be near their husbands but it also has filled an urgent need for women to serve in clerical jobs, in PXs, Service Clubs and the like.

Special provisions for emergency medical attention have also been made by the league. When word is received at local league offices that medical service is needed by one of these cadet wives, an officer's wife calls on her and, if necessary, arranges for hospitalization or medical attention. Calls on all patients in homes or at the hospital are made by members of the Officers' Wives Committee.

As each new cadet wife arrives the league sends her a letter of welcome which is followed up with a personal call by a member of the Cadet Wives Calling Committee. She is advised of the assistance the league can offer and is urged to join its social activities. At a supper each Wednesday evening, the wives become acquainted, conduct group singing and listen to talks given by selected officers on such topics as "Customs of the Service," and "Safeguarding Military Information."

The idea for the league began with the Woman's Club of the Army Air Forces at Santa Ana, Calif., more than a year ago. A committee studied problems facing cadet wives and organized the league to meet them. Branches were begun in all stations in the WFTC. A committee of officers' wives and another of cadets' wives work together to handle the business of the league. Cadet wives are urged to register at the headquarters of each new station when they arrive.

The U. S. Employment Service reports to the league any available employment in the area. Army Emergency Relief keeps a representative at headquarters and responds promptly in all cases where financial or other emergency assistance is necessary. The success of the plan in the WFTC has led to the organization of a similar Cadet Wives League in San Antonio, Texas, and at Turner and Cochran Fields, Ga. Incidentally, the identifying badge of the league is a flying wedding ring.☆

An officer's wife and an AIR-WAC are on duty daily at the Cadet Wives League headquarters to answer questions and unravel problems of incoming wives of aviation cadets and aviation students.

Cadet wives recently employed by the AAFWFTC Officers' Mess learn the art of balancing trays. These patriotic women are proving valuable in jobs for which enlisted men are no longer available.

FLYING SAFETY

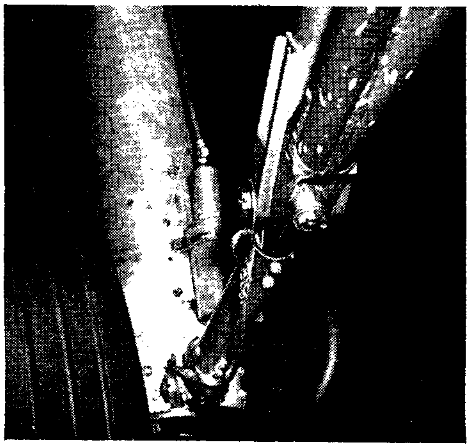
Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction.

These items are for educational purposes and are not to be construed as directives.

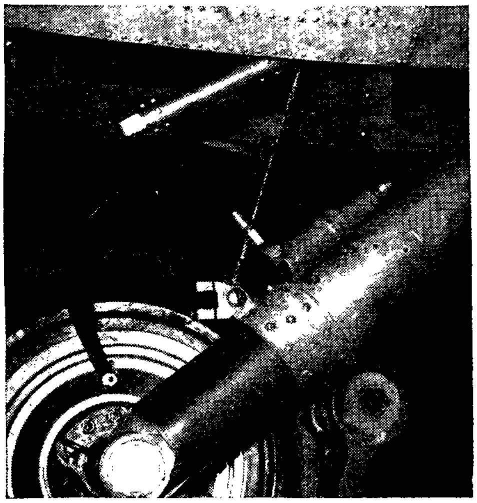
DANGLING WHEEL LANDINGS

Photographs showing a demonstration of the Hendricks Field, Fla., method of landing a B-17 with a dangling left wheel were published in last month's AIR FORCE.

Since that landing was accomplished, the field has taken steps to make the task easier. The drag links on the main gear have been reinforced by a flexible cable (see photographs).



How cable is installed.



Cable holds wheel up when link is severed.

In case of a broken drag link, the cable is intended to hold the wheel at least in a forward position if it can't be entirely retracted. With the wheel in a forward attitude, it will slide naturally in the nacelle well when the plane settles on the runway during an emergency landing.

When a B-17 is equipped with a ball turret, and it is certain damaged gear will go up into the nacelle, Hendricks Field recommends that the other wheels be extended for the landing.

A board of officers which surveyed heavy bombardment training recommended that these procedures be known wherever a crippled B-17 might be required to land.

A complete description of emergency landing procedures for B-17 aircraft, developed at Hendricks Field, may be obtained by writing Headquarters, AAF, Office of Flying Safety, Safety Education Division, Winston Salem, N. C.

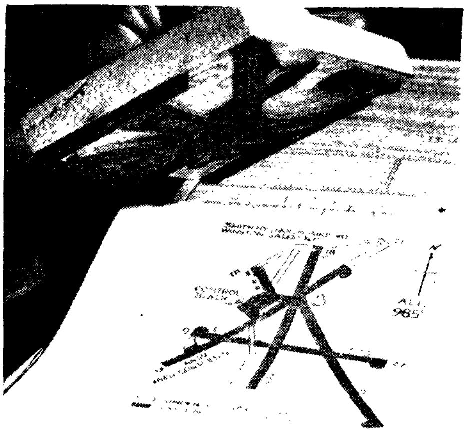
CRITICAL PERIOD

The statistical officer of a fighter group at Dale Mabry Field, Fla., has figured out when various critical periods are reached in a flyer's career on the basis of past accidents.

When one of the group's pilots reaches one of these critical stages he is presented an illustrated card which points out principal causes for accidents in the particular category and offers advice in exercising caution. For example, a portion of the thirty-hour card reads:

"Plain sense equals plane sense. Overconfidence and 'shining your rind' are expensive and dangerous forms of egotism. Fly within the limits of your technique."

STAMP



New clearance form stamp.

The stamp shown above is placed on all clearance forms issued by operations at Smith Reynolds Airport, Winston-Salem, N. C., and is designed to help a pilot follow tower instructions. A new version of the stamp is to include the tower frequency. Where use of a stamp is not feasible, the same result can be achieved by clipping a mimeographed sheet to the Form 23.

BEWARE OF 'FEATHERITIS'

A mule skinner snaking a load up a hill with a team of four wouldn't automatically cut out a mule that wasn't giving full output. As long as the mule was pulling more than his drag, the skinner would keep him in there to avoid overloading the other three.

However, if the mule was obviously sick, or pretty certain to collapse, the skinner might grant relief, but considerable care would then be needed to nurse the remaining mules along.

And before he acted, the skinner would be sure to unhitch the correct mule— a feat not beyond the capabilities of the average muleteer, or pilot either for that matter.

This little parable has considerable significance for the pilot of a four-engine bomber, who is bound to be faced with the problem of the unruly engine. This is especially true in combat where flak and enemy fighters have a way of placing a premium on a thorough knowledge of emergency procedures.

One more barnyard analogy, then we'll take to the air: The mule skinner's troubles may have arisen from previous abuse or overwork of his faltering charge, and this type of conduct can cause a pilot similar grief.

It's no secret that there have been too many B-17 and B-24 accidents attributed to engine failure. Regional safety officers of the Office of Flying Safety recently made a survey to determine how many of these failures were induced by the pilot, either through ignorance or confusion.

A substantial percentage of the accidents, it was found, showed the pilot lending a hand to the outcome. This is something for a director of training, concerned with making the best use of every available hour, to ponder. And a four-engine pilot, who lightly passes up an opportunity to be present at a 50-hour inspection, might also give it a little thought.

THESE induced failures, as might be expected, were caused in the main by lack of knowledge of engines, instruments and controls—either one or all three. Specifically, the failures usually resulted from overheating through exceeding power limits or misuse of the cooling system, improper use of the propeller controls, or unfamiliarity with the fuel system.

The study disclosed a new malady which seems to have afflicted many pilots of multi-engine aircraft. It's known as "featheritis." These flyers somehow have gathered the notion that prompt action with the feathering button is the solution of any and all engine problems.

The origin of this disease is a matter of guesswork, but it probably stems from the training a pilot receives in flying his plane with one or more engines inoperative. Pilots must remember that these maneuvers are "emergency procedures," with accent on the word "emergency." They aren't intended for use every time an engine loses ten pounds of oil pressure.

In this business of being a fast man with a feathering button, the Prevention and Investigation Division, Office of Flying Safety, makes the following recommendation:

As a general rule, an engine losing power should not be feathered as long as it shows twelve inches of manifold pressure and is not vibrating excessively.

Twelve inches of mercury reveal sufficient power to offset any saving in drag which would be effected by feathering. (Figure 1.)

Pilots also should remember that any time an engine is turning over faster than the wind-milling speed it is still delivering power.

Once an engine is feathered, there is always the danger of the failure of the remaining three. Reports of B-17 and B-24 accidents prove this point. The subsequent failures are caused by "pouring the coal" to the remaining engines, which brings on complete loss of power, with detonation as a prelude.

The problem is made acute by the widespread use of 91 octane gasoline in training. Satisfactory two- and three-engine operation is possible with this gas, but the critical limit of the engines is greatly reduced. Pilots should be very careful with that boost.

After feathering, many pilots perfectly aware of the danger of a heavy hand on the throttles still make the mistake. That's because after pushing the throttles forward, the adjustment of other controls takes longer than they had anticipated. When there's sufficient altitude, it's a good plan to throttle back first, make necessary adjustments, then increase power as needed. But nurse it, brother, nurse it.

Before any engine is feathered, it should be remembered it's easier to throw power away than it is to get it back. Power is something like money in that respect. Except in case of fire, there's no particular need to hurry.

And even when fire is suspected, two conditions can lead a pilot astray. After

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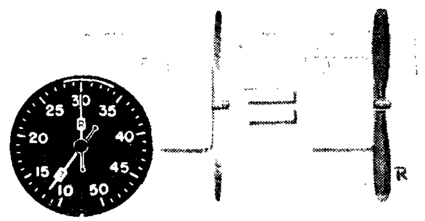


Fig. 1

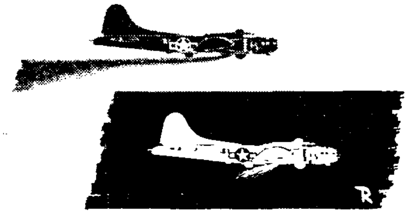


Fig. 2

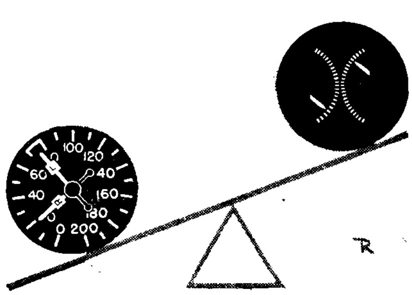


Fig. 3

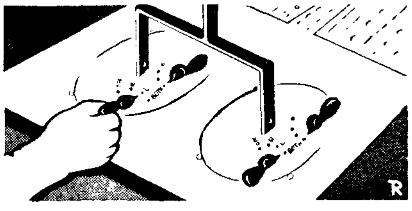


Fig. 4

P. & I. SAYS:

(The Prevention and Investigation Division, OFS, is composed of veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

DYERSBURG, Tenn.—Two members of the crew of a B-17 were killed when they were thrown from the plane without their parachutes from an altitude of 1,000 feet.

The men were catapulted through a hatch in the radio compartment as the result of a violent maneuver to avoid collision with another Fortress.

P & I COMMENT: This should be food for thought for men who regard a parachute as a useless encumbrance.

CERRO, N. Mex.—All members of the crew of a B-17 were killed when the plane flew into a mountain peak near here at 11,500 feet.

The plane, on a night navigation mission, was 150 miles off course. The weather was CAVU, but with a light haze. It is believed that a contributing factor was impaired night vision caused by not using oxygen.

P & I COMMENT: The importance of using oxygen at night in high altitude equipment cannot be overemphasized. For instance, at 12,000 feet night vision without oxygen is only half as good as at ground level. Throw in a little haze and you can understand why the pilot couldn't see the mountain peak.

- - -

EL PASO, Texas—A B-24 crashed near here when the pilot tried to stretch his glide after it became apparent he couldn't make the field due to a fuel failure.

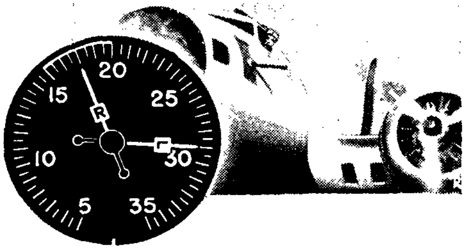
The failure was caused by unfamiliarity of the aerial engineer with the fuel system. He set all four selector valves on the main tanks to cross feed, thus cutting off the supply to the engines.

Five members of the crew were killed and three sustained major injuries. The airplane was demolished.

P & I COMMENT: To stop these fuel system tragedies (there have been others), aerial engineers, assistant engineers and others concerned must understand the system and not have only a superficial knowledge of which valve to turn under normal conditions. This requires thorough teaching, using mock-ups when possible and subsequent checks both on the ground and in flight.

Reports from combat invariably stress the vital importance of this training, a fact which is easily understandable when the number of emergencies that can arise on any mission are considered.

FIG. 5



the take-off, an engine which has been improperly cleared will give out clouds of black smoke. On night take-offs, red flames at times may be seen shooting from the turbo if an excessively rich mixture has been used. These aren't fires. (Figure 2.)

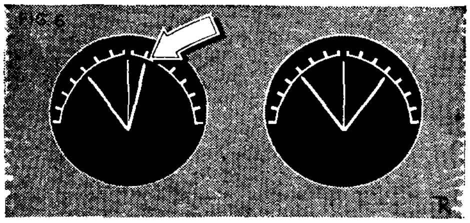
When the oil pressure drops on an engine, a pilot should double check on the oil temperature gauge. The oil temperature will come up if there's anything radically wrong. (Figure 3.)

If an engine develops roughness, the magnetos should be checked. The motor might do all right on one mag. (Figure 4.)

It should always be borne in mind that instruments on an airplane aren't infallible. In one bomber, for instance, trouble in the electrical system frequently has caused the indicators on the manifold pressure and RPM gauges to go down gradually, giving a picture of a loss of power.

Before the throttle is jammed forward (which really will cause a loss of power), the eyes and ears should be used to detect whether the engine appears to be operating normally. The head temperature gauge will furnish another check. (Figure 5.) The head temperature will decrease if power is being lost through failure of the fuel or ignition systems. If the trouble is detonation, the temperature will rise. (Figure 6.)

FIG. 6



Head temperature readings also provide an invaluable clue in locating the engine causing trouble. This isn't always as easy as it might seem. The manifold pressure and RPM of an engine won't always tell the story, because wind-milling can delay the reaction of these gauges.

When trying to single out a bad engine, a pilot should look for vibration and keep in mind that a plane will tend to turn into the side which isn't delivering power.

An over-revving prop doesn't necessarily mean it's in the runaway class. Unless the RPM has reached a danger point, set by the pilot in advance, the engine should be kept in operation with reduced manifold pressure.

However, before a pilot decides on this matter he should check with an instructor pilot or engineering officer. The danger point will vary with the equipment.

When a feathering button has been pushed too quickly, it is not necessary for the whole cycle to be completed before the prop can be unfeathered. If the RPM has not dropped below 1,000, all that is necessary to unfeather is to pull out the button.

By a wide margin, the greatest single cause for the failure of an engine comes from abusing it by excessive demands for power. Any time the red line is needlessly ignored, trouble is around the corner.

Small things as well as the big items must be watched. Here's a commonplace procedure that places an engine in danger: The practice of reducing to low RPM before lowering the manifold pressure when setting the controls for climb after take-off or cruising after climb.

This simple thing can cause the manifold pressure to exceed red line limits for sufficient time to cause detonation. The procedure should be exactly reversed. ☆

What's Your AIR FORCE I.Q.

Get on your best mental behavior and land on this month's AIR FORCE Quiz. Credit five points for each question answered correctly. If your total is 80 or above give yourself a pat on the back; 70 to 80, not bad; 55 to 70, fair to middling; below 50, room for improvement. Answers on Page 51.

1. The P-70 is a modified version of the
a. P-38 *c. A-20*
b. P-51 *d. P-47*

2. D minus 15 refers to
a. An international code word for "All Clear"
b. Fifteen degrees off true north
c. An AAF Technical Order
d. Fifteen days before the date set for an attack

3. Bougainville is located
a. In New Guinea
b. Due west of Hawaii
c. In the Solomon Islands
d. In the Marshall and Gilbert Islands

4. A First Sergeant receives the same base pay as a
a. Master Sergeant
b. Technical Sergeant
d. Warrant Officer
c. Staff Sergeant

5. A number of fighter planes fly in a tight circle, defending each other's tails. The name usually given to this formation is
a. Immelmann *c. Company Front*
b. Lufberry *d. Renversement*

6. The Commanding General of the 14th Air Force is
a. Maj. Gen. Claire L. Chennault
b. Lieut. Gen. Ira C. Eaker
c. Lieut. Gen. Carl A. Spaatz
d. Maj. Gen. Frank O'D. Hunter

7 AAF personnel are entitled to longevity pay after how many years of service?
a. Three *b. Five* *c. Ten* *d. Two*

8. Rime is
a. A form of torque resulting from reduced airspeed
b. A cloud formation usually found in the South Pacific
c. Air sickness resulting from poor oxygen flow
d. A form of ice which adheres to exposed surfaces

9. Lowry Field is located nearest to
a. San Antonio, Tex. *c. Tampa, Fla.*
b. Denver, Col. *d. Stockton, Calif.*

10. A "grasshopper plane" usually refers to a
a. Light plane often used for liaison and reconnaissance work
b. A-20 used in low-level attacks
c. Plane out of control which rises and falls violently
d. German ME-110

11. Vertigo is
a. A form of dengue fever
b. Severe limb paralysis
c. Dizziness
d. A form of temporary deafness

12. Here are three of the Four Freedoms. Fill in the fourth.
a. Freedom from want
b. Freedom of speech
c. Freedom of religion
d. . . . .

13. The name popularly given to the A-36 is the
a. Invincible *c. Terrier*
b. Invader *d. Invisible*

14. To what instruments does the 1-2-3 system refer?
a. Altimeter, airspeed and directional gyro
b. Artificial horizon, needle and ball and altimeter
c. Rate of climb indicator, altimeter and needle and ball
d. Needle and ball and airspeed

15. The capital of Australia is
a. Melbourne *c. Canberra*
b. Brisbane *d. Sydney*

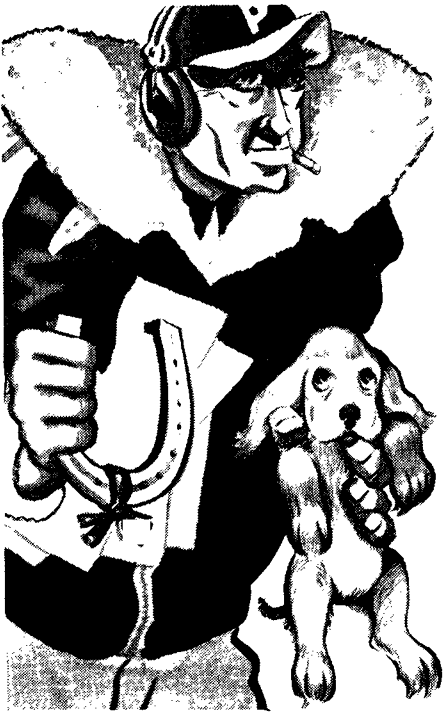
16. The Skagerrak is
a. A Russian fighter plane
b. A body of water between Norway and Denmark
c. The capital of Iraq
d. An instrument used by P-51 pilot

17. "Flying the milk run" usually refers to
a. A monotonous or routine flying assignment
b. Flying to a supply base for additional rations
c. Target towing for gunnery practice
d. Flying students on practice missions

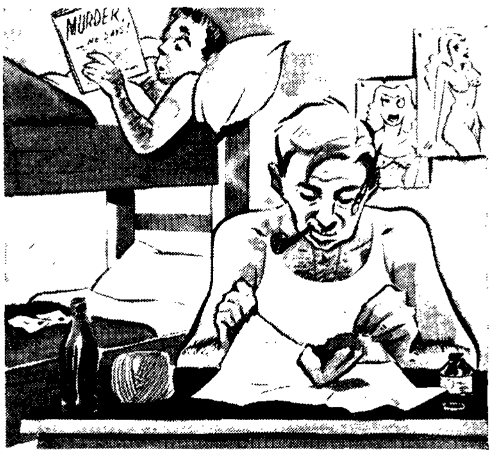
18. A nephoscope is used to
a. Determine fuel supply
b. Measure cloud movement
c. Indicate approximate position of nearest radio tower
d. Regulate voltage imput from generator to battery

BOMBER CREW

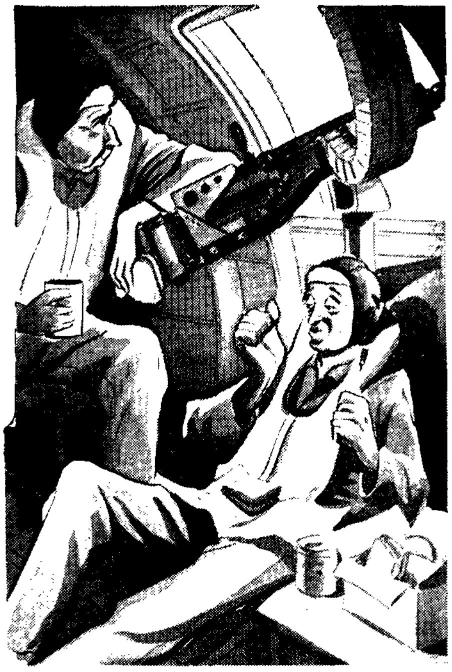
By Lieut. Wm. T. Lent



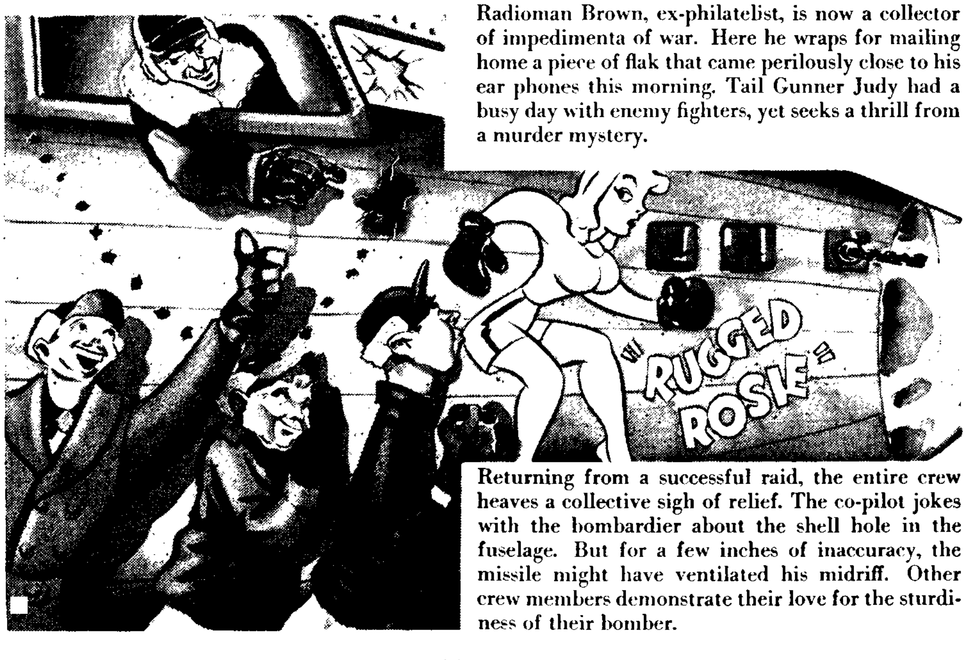
First Pilot Fredericks gives himself a pre-flight hocus-pocus briefing before each mission. This ritual includes fondling the squadron horseshoe and mascot. His co-pilot razzes him about such foolishness but covertly carries a rabbit's foot himself.



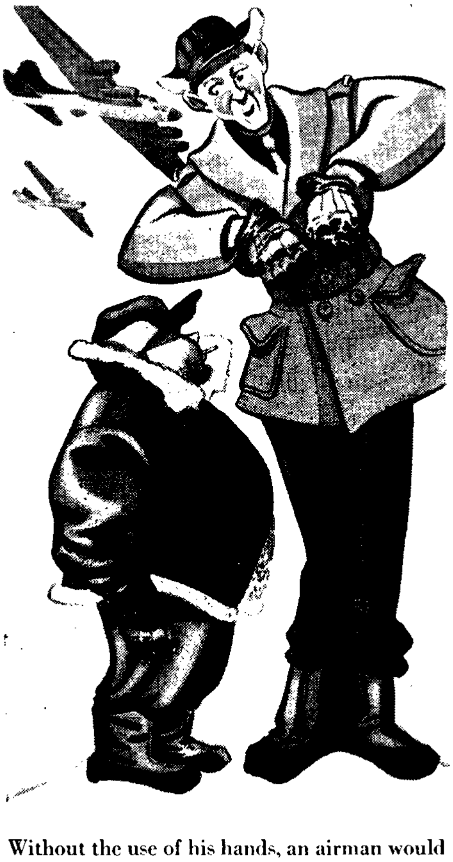
Radioman Brown, ex-philatelist, is now a collector of impedimenta of war. Here he wraps for mailing home a piece of flak that came perilously close to his ear phones this morning. Tail Gunner Judy had a busy day with enemy fighters, yet seeks a thrill from a murder mystery.



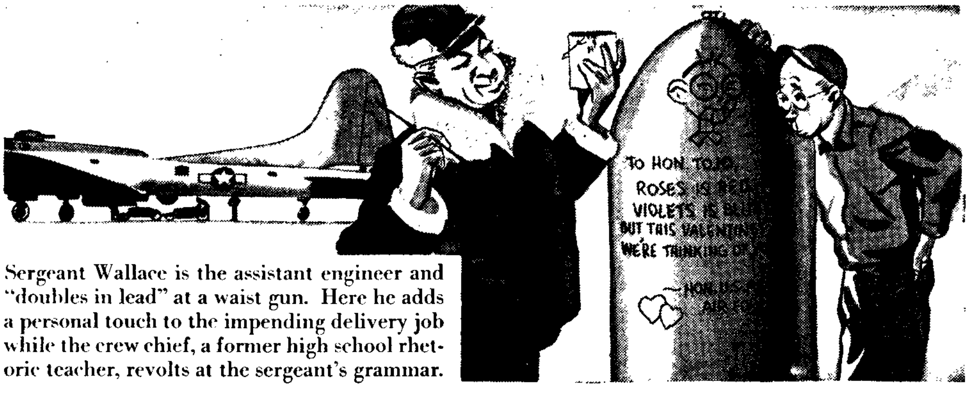
Back over friendly territory after a mission, the waist gunners keep one eye peeled for enemy interception and the other on a Spam sandwich and a can of fruit juice. These men have a standing bet on their combat marksmanship and today's score is three ME-109Gs to two in favor of Sergeant Horton. He will exact the usual payment at the PX bar tonight.



Returning from a successful raid, the entire crew heaves a collective sigh of relief. The co-pilot jokes with the bombardier about the shell hole in the fuselage. But for a few inches of inaccuracy, the missile might have ventilated his midriff. Other crew members demonstrate their love for the sturdiness of their bomber.



Without the use of his hands, an airman would be tongue-tied. Navigator McQuiston, as is his wont, gives forth on the necessity of maintaining level flight for proper navigation. His audience consists of rotund Ball Turret Gunner Coster, the custom-built member of the crew who grows to resemble his environment with the passing of each combat mission.



Sergeant Wallace is the assistant engineer and "doubles in lead" at a waist gun. Here he adds a personal touch to the impending delivery job while the crew chief, a former high school rhetoric teacher, revolts at the sergeant's grammar.

OUR AIR WACS

By Charlotte Knight

AIR FORCE STAFF

The girls have proved themselves to the AAF, and thousands more are joining up.

THEY are officially the *Air* Wacs now. Radio operators and grease monkeys, dispatchers and draftsmen, pharmacists and photographers, chemists and cartographers, typists and teachers, pigeoneers, plotters, meat cutters, cooks, dog trainers—200 different jobs in the Army Air Forces at about 200 different stations. That is the record achieved by the AAF contingent of the Women's Army Corps in less than a year.

But still there aren't enough to go around. More Wacs are needed at every AAF station. The AAF has launched a nation-wide campaign to add 46,000 Air Wacs to its ranks *immediately*.

For the first time since the Women's Corps was organized, WAC enlistees may now request assignment to the Army branch of their choice and may also be recommended for the type of job they desire. And from all reports thousands of new recruits are choosing the AAF.

The admiration is mutual. Air Force leaders, enthusiastic about the Women's Army Corps since its inception, needed no converting to the idea that khaki-skirted women could replace men in scores of non-combatant jobs. As long as eighteen months ago, the AAF startled even the most ambitious WAC recruiters by announcing that it could and would use 375,000 Wacs if it could get them. And the AAF finally has received the green light to do its own WAC recruiting.

The Training Command absorbs the majority of Air Wacs, but a generous allotment is made to other commands and stations. For example, a qualified woman radio operator, upon completion of her basic training at Oglethorpe, Des Moines or Daytona, may be assigned immediately to some AAF station for radio duties. If further training is needed, women may be given on-the-job training, or may be sent to one or another of the AAF technical schools.

A check list of GI tasks performed by Wacs reveals that a year has transformed them into electricians, printers, truck drivers, translators, photo retouch artists, link trainer instructors, cryptographers, hospital orderlies, fingerprinters, dental hygienists, entertainment directors, airplane inspectors, chaplain's assistants, bombsight mechanics, surgical technicians, MPs, and statisticians. They have even invaded the control towers at our air bases.

The endorsement that counts most comes from the officers who have had Wacs working for them. Those officers are now shouting: "Send me more. Send me as many as you can get."

Until the WAAC dropped an "A" last September and became an official part of the regular Army instead of an auxiliary, WAC officers were confined to administrative positions, doing the "housekeeping" for the corps itself. Now, however, WAC officers directly replace male officers in a constantly growing number of technical and administrative jobs. So don't be at all surprised to see a silver-barred Wac holding down a spot on your field as public relations officer, special services officer, legal officer, base personnel officer, PX officer or even air traffic officer.

After taking over the desk of a male officer, one WAC captain in the Air Transport Command reported: "We found some of the officers actually had suitcases packed ready to go overseas waiting for us to arrive. They were certainly glad to see us."

The ATC, incidentally, is one of the WAC's most enthusiastic boosters. Early in July, convinced that WAC officers could assume many of the command's administrative duties, the ATC took 100 women officers for strictly "operational" jobs. Now they want many more.

You'll find these women of the ATC serving in priorities and traffic offices, intelligence sections, weather offices, postal services, public relations and a dozen other offices. One WAC officer replaced a major in the Maintenance Engineering Division, where she keeps track of the ATC's grounded planes and expedites delivery of parts to get them in the air again. Another, as personal affairs officer for the Sixth Ferrying Group, assists the men in settling financial affairs, arranging insurance, allotments and claims. Others handle negotiations, clearances and general preparations for embarking and debarking passengers who pass

These readings will lead to some important forecasts about the kind of weather the boys up yonder can expect. These Air Wacs are expert weather observers at Mitchel Field, N. Y.

When she replaced a male soldier as maintenance mechanic on the flight line at Moore Field, Texas, this Air Wac discovered she had taken on a man-sized job. But these coveralled and grease-smeared women take to the engine repair shops as readily as to the kitchen—and seem to enjoy it more. The AAF needs hundreds more for mechanical jobs, electroplating, etc.

through ATC terminals. One such WAC operations officer was asked if she liked her job. "Like it?" she exclaimed. "I've checked in Lord Louis Mountbatten, Winston Churchill and Sir John Dill in one week. Who wouldn't like it?"

Air Wacs are being sent overseas at a steadily increasing rate. England and Africa have most of them at the present time, although plans are being made to send Air Wacs to several other theatres. The majority of Wacs in Britain serve the 8th Air Force in some 150 different jobs. Many assist in the preparation of target reports for raids over Germany, others plot the bombers' courses, prepare analyses of the mission's success, chart graphs, keep statistical records of battle casualties, and interpret aerial photographs taken on the mission.

They don't fly planes or pull triggers or release bombs. Theirs is a behind-the-lines, frequently underrated role. But the Wacs *are* soldiers, doing soldiers' jobs to keep the AAF's planes in action. Ask any harassed, understaffed CO. ☆

'An Enviable Record'

The following commendation was received by Col. Oveta Culp Hobby, Director of the WAC, in the form of a letter from General Arnold:

"I have been highly gratified with the record of the members of your command now on duty with the Army Air Forces.

"Not only have members of the Women's Army Corps made an enviable record through their work at AAF installations in this country, but splendid reports have come to me on the work of the Corps with the Eighth Air Force in the European Theatre of Operations.

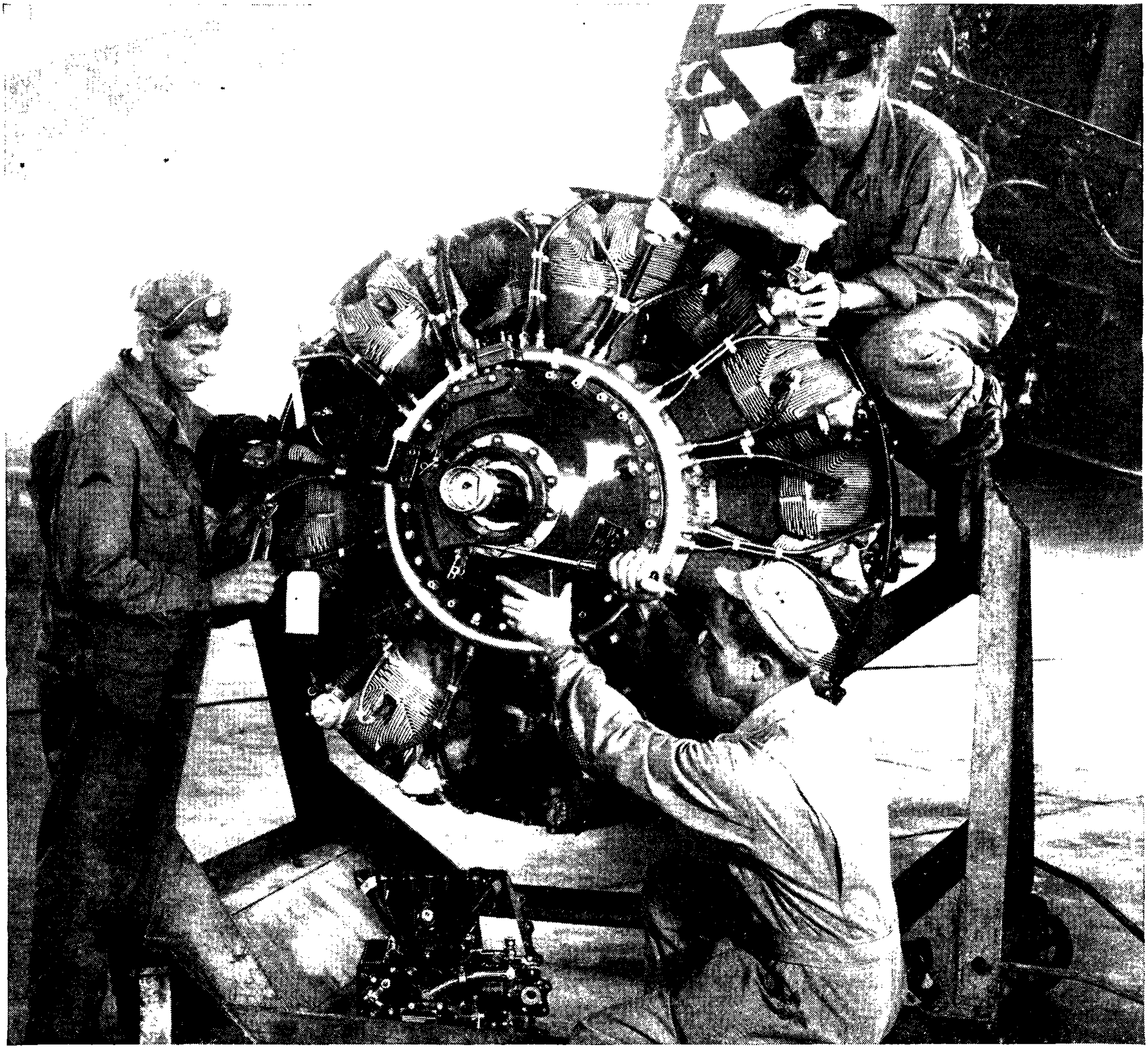
"As you know, the AAF desires to utilize the WAC component of the Army to the fullest extent. You may be assured that the AAF will do everything possible to assist in recruiting women for this important Army work."

RUSSIA
TYRRHENIAN SEA

Interpreting aerial photographs has been added to the growing list of important "operational" jobs assigned to Air WAC officers. AAF-trained WAC photographers, lab technicians, photo retouch artists and camera repairmen can also be found at almost every Air Force station.

Number One Wac in the AAF is Major Betty Bandel, first Wac to win her gold leaves and who, as Air WAC Officer, channels 43 percent of all Wacs into waiting Air Force jobs.

The moment for which most Wacs work and wait arrives when they get sailing orders. Hundreds of Wacs have gone overseas to take vital jobs with the AAF in communications centers, intelligence, supply, instrument and parachute repair, motor transport, special services, and a score of other departments. This Army truck moves off to the docks with its cargo of excited Wacs.

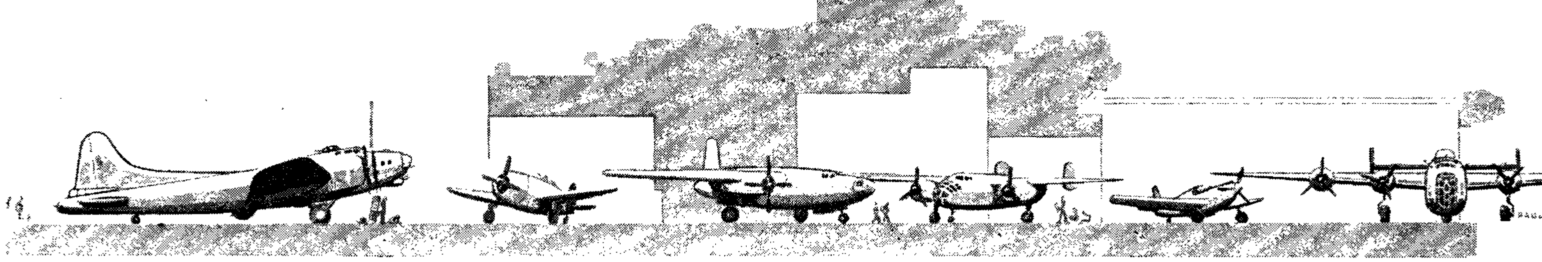


WHAT'S WRONG WITH THIS PICTURE?

The three privates can point out seven mistakes in the picture. These are listed on Page 64. Can you find any more?

The engine in this picture has been pickled. So were the mechs working on it, we'd say, if we didn't know that they posed these boners in cold sobriety. In the picture are Pfc. Jack Bergel (left), and Pvt. Don R. Johnson (right), of the 478th Air Base Squadron, Patterson Field, and, on the engine stand, Pfc. Harry F. Sawyer, Headquarters Squadron, Air Service Command, Patterson Field, Fairfield, Ohio.

Picking out these boners may seem a cinch, men, when we tell you that all the mistakes in the photograph are covered basically by TO 02-1-1. Overseas reports indicate careless preparation of engines for storage. That's all, brother. Get the number of this TO down pat—TO 02-1-1, "The Preparation of Engines for Storage."



To Fly Through the Air With the Greatest of Ease . . .

To achieve speed a race horse is faultlessly groomed and as slick as one of the new steel pennies. A new airplane, too, is just as spotless as the designer can make it. Keeping an airplane immaculate is termed *aerodynamic maintenance,* a two-dollar phrase that merely boils down to a lot of simple, horse-sense maintenance habits that frown upon cabin doors or cockpit hoods improperly fitted as well as leading edges of wings, stabilizers and cowlings dented. It takes in such stuff as leaving unused radio insulators still installed or mechs walking on wings with heavy nailed shoes.

Internal dirt, also, adds unnecessary weight to aircraft and roughened or nicked propellers retard the airplane's best performance.

Smoothness or lack of it in high-speed aircraft may mean decisive superiority or inferiority to the enemy airplane in combat. Be more particular than you were of your Sunday best civvies in this matter of aerodynamic maintenance. Obstructions or roughness which increase drag can mean disaster.

The old Jennies of the first World War flew at eighty miles per hour with approximately ninety horsepower. A projecting part on a P-47 would cause approximately 125 times the amount of drag that one of equal size would have on a Jenny. Figure it out. A Jenny in this war would amount to a speedy invitation to be a harp-player.

There are a flock of factors that determine yes or no to an airplane's whirring across the sky in smooth perfection. Read the whole story in TO 01-1-140, "Aerodynamic Maintenance of Aircraft." And there are plenty of pictures in it.

Corrosion . . .

The lagging not being removed from oil scavenging and propeller feathering oil lines results not only in corrosion of the metal lines but deterioration of nonmetallic lines as well. Take a look at TOs 02-1-44 and 03-20CC-7.

TO Index Now Bi-monthly . . .

Instead of the monthly issuance of TO 00-1 (the index), the new schedule calls for a new index every other month. On the first and fifteenth of each month a supplementary listing of all new TOs and those TOs rescinded during the previous two-week period will be issued.

B-17 'Slugger' Goes 900 Hours Without an Engine Change . . .

A new world's record for B-17s is believed to have been rung up by "Slugger," a Roswell (N. Mex.) Army Air Field training plane, which recently flew 900 hours without an engine change. The time is about 150,000 miles of routine flying at this AAF Training Command Four-Engine Pilot Transition school.

Strictly a veteran of the battle of New Mexico, the Fortress arrived at Roswell straight from the Vega plant in Burbank, Calif., with 12.9 flying hours to her credit. There "Slugger" became one of the regulation training ships, assigned to the squadron commanded by Capt. Van A. Pierce, and began shooting landings and going on cross country flights with student officers at the controls.

The B-17 went through the usual maintenance routine—change of oil, a new supercharger and the necessary precautionary checks. After 500 flying hours a Fortress is supposed to be ready for new engines. But when "Slugger" completed 500 she didn't need any. And the excitement began.

Maj. George E. Franks, director of maintenance, interceded and won permission from Air Service Command to fly "Slugger" another 100 hours. The B-17 completed these and asked for more. The Air Service Command extended the time to 750 hours. Still the B-17 didn't need an engine. Major Franks then got permission to go to 900 hours and "Slugger" thereupon set what is believed to be a new record for planes of her class, to the jubilation of all including field representatives Philip A. Benson and J. A. Higgins of Boeing and George A. Peavy of Wright Aero.

After 900 hours—37½ days of round-the-clock flying—"Slugger" got new engines and a bath.

Hats off to the mechs of the AAF who kept "Slugger" slugging.

Not So Much Stuffing . . .

Overloading in life raft compartments is a principal cause of life raft doors failing. This is fatal. See Par. 6 *b* (2) TO 04-15-1.

Use the Battery Cart . . .

The failure to use battery carts to start all aircraft equipped with external power plug causes run-down batteries and runaway propellers. See Par. 1 g TO 03-5-39, Par. 2 *a* (3) TO 03-20B-3 and TO 01-1-52.

Coming in for a Landing . . .

Drain plugs are to be safetied in left and right landing gear down lock valves on B-25 Series aircraft. Otherwise, there might be a failure of landing gear locking mechanisms should the plug work loose and come out. Another landing gear failure might result if the main strut attachment bolts are loose on left and right landing gear of P-39 Series aircraft.

Too Many Times . . .

Numerous cases of loose spark plugs and loose spark plug lead elbows are showing up on all types of aircraft. Remember that loose plugs cause rough operation and loss of power. See 03-5E series TOs. ☆

"Slugger," the 900-hour engine B-17, is shown below with her crew, engineering officers and factory representatives at Roswell.

Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

MEDAL OF HONOR

Cheli, Ralph, Maj. (Also DFC & AM)
Jerstad, John L., Maj. (Also SS)

DISTINGUISHED SERVICE CROSS

*Alsip, Raymond H., Cpl.
Bengel, George H., T/Sgt.
Brown, George S., Maj.
Conroy, Thomas C., Capt.
Cragg, Edward, Maj.
(Also SS, PH, DFC & 3 OLC & 2OLC to AM)
Fegan, Robert W., S/Sgt.
Helder, Ronald L., Lieut.
Herlevic, Frank A., T/Sgt.
Judy, James B., Lieut.
McFarland, Kenton Dean, Lieut.
(Also DFC)
Mix, Joseph E., T/Sgt.
Slessor, Lee D., Lieut.

DISTINGUISHED SERVICE MEDAL

*§du Pont, Richard C.

LEGION OF MERIT

Allen, Brooke E., Col. (Also DFC)
Almand, William J., M/Sgt.
Backus, Edward N., Col.
(Also AM & OLC)
Briggs, James E., Col.
Fletcher, Albert W., Maj.
*Hutchins, Russell, Sgt.
Imparato, Edward T., Maj.
Murray, Charles E., Maj.
*Olsen, Roy W., Capt.
Shegda, Walter W., Maj.
*Skorczewski, Thomas H., T/Sgt.
Wells, Leslie L., Capt.

SILVER STAR

Allen, David W., Lieut.
(Also DFC & AM)
Anderson, Fred E., T/Sgt. (Also DFC)
*Angel, Frederick L., Lieut.
Arne, Earl W., S/Sgt. (Also AM)
Avendano, Joseph, Lieut.
Bacon, William C., Maj.
(Also DFC & OLC & 2 OLC to AM)
*Bevlock, James J., Capt.
Bewak, Fred J., T/Sgt.
(Also PH & DFC)
Blakey, George A., Lieut. Col.
(Also DFC & AM)
Bloomhuff, John E., Lieut.
Bosso, Philip, S/Sgt. (Also DFC)
Brainard, Ceylon H., Lieut.
(Also DFC & AM)
Breen, John E., Sgt.
Brown, Paul D., Maj.
Brzuska, Edmund E., Lieut. (Also AM)
Cameron, William R., Capt.
Conn, Mayron R., Lieut.
Dessert, Kenneth O., Maj.
Dickinson, Clair E., Sgt.
Edmonds, Harold W., Capt.
Edmundson, James V., Maj.
(Also OLC to DFC)
*Elliott, Eldon M., T/Sgt.
*Eynaud, Emile A., M/Sgt.
Fincher, Benjamin C., Lieut.
Fletcher, Edgar G., Sgt.
Flores, Walter S., Lieut.
Gallup, Charles S., Lieut.
Gardner, Bruce A., Capt. (Also DFC)
Gavura, Albert F., Sgt.
Germeraad, John H., Lieut.
(Also DFC & AM)
Gilbert, Robert E., Sgt.
Gillette, Louis Church, Lieut.
(Also DFC & AM)
Golotto, Frank, Sgt. (Also AM)
Goodrich, Earle A., Lieut.
Gorsuch, Kenneth W., S/Sgt.
Gossard, Leonard J., Lieut.
(Also DFC & AM)
Grieve, Lloyd W., Cpl.
Gudenschwager, Lester L., S/Sgt.
(Also AM)
Haggerty, Richard J., T/Sgt.
(Also DFC & AM)
Hall, Earl O., Capt.
Hamway, Tom F., S/Sgt.
(Also DFC & AM)
Hancock, Humphrey B., T/Sgt.
(Also DFC & AM)
Handrow, Horst W., S/Sgt.
(Also AM & OLC)
Hansell, Haywood S., Jr., Brig. Gen.
Harris, Jack O., Sgt. (Also AM)
Hasik, George L., Lieut.
Heising, Richard J., S/Sgt.
(Also AM)
Helms, Barney W., T/Sgt. (Also AM)
Helveston, George T., Lieut.
Henderson, Benjamin W., Sgt.
(Also DFC & AM)
Hensley, Harold P., Lieut.
Hicks, Preston R., Sgt.
Holliday, Robert L., Cpl.
Holt, Charles E., S/Sgt. (Also DFC)
Houston, Joseph T., Lieut. (Also AM)
Hundley, Otho C., S/Sgt.
(Also DFC & AM)
Inman, Harold R., S/Sgt.
Jenkins, Edwin C., T/Sgt.
(Also DFC & AM)
*Johnson, Al C., Sgt.
Jose, Elmer H., Lieut. (Also AM)
Kaiser, James M., Lieut. (Also AM)
Kelley, Gordon L., Capt. (Also DFC)
Kelley, James F., Lieut.
Klasnick, Joseph S., S/Sgt.
Kosakowski, Joseph E., Lieut.
*Lee, Jack, Lieut. *(Also AM)
*McCullar, Kenneth Dalton, Maj.
*(Also 3 OLC to SS, PH, AM & 3 OLC)
Meador, Stell, Lieut.
*Montfort, Frank W., Lieut. *(Also PH)
Morgan, Leroy B., Lieut.
*Pacheco, Jacobo E., Sgt.
Peterson, Arman, Col.
(Also DFC, AM & 3 OLC)
Reuter, George J., Jr., Lieut.
Riordan, Timothy, T/Sgt.
Sarnoski, Joseph R., Lieut. (Also AM)
Swensson, Berthel, Lieut.
Taylor, Wallace C., Capt.
Watson, James A., T/Sgt.
Weaver, Worden, Lieut.
Zemke, Hubert, Col.
(Also DFC, AM & 3 OLC)

OAK LEAF CLUSTER TO SILVER STAR

Andrade, Michael R., Pfc. (Also DFC)
Barlow, Robert L., T/Sgt. (Also DFC)
Bayles, Joseph, Cpl.
Bender, Frank Peter, Capt. (Also AM)
Blakely, Quentin W., Sgt.
Bonham, Donald L., Lieut.
Brady, Francis M., Brig. Gen.
Bryant, Warren E., Lieut. (Also AM)
Burton, Frank M., Lieut.
Faurot, Robert L., Lieut.

PURPLE HEART

Antosz, Frank G., S/Sgt.
Auman, Rictor H., Lieut.
Bamber, Joyce J., Lieut. (Also DFC)
Bannon, John R., Lieut. (Also DFC)
Bauman, Rexford G., Lieut. (Also AM)
Beasley, William D., Lieut.
(Also OLC to DFC)
Belleville, Walter B., Jr., T/Sgt.
(Also DFC)
Boothe, Harry J., Lieut.
Britt, James O., Lieut.
*Brooks, Harold V., T/Sgt.
*(Also OLC to AM)
Buchholz, Martin A., S/Sgt. (Also DFC)
Dean, John A., Lieut.
Elliott, Wilson C., S/Sgt.
Ellis, Earl E., Lieut. (& OLC)
Gilliam, Delbert Clyde, Sgt.
(Also AM & 2 OLC)
Gustafson, Everett W., Sgt.
(Also OLC to AM)
Hall, Emory L., Lieut.
Hammer, Stewart W., M/Sgt.
Haney, Richard P., Lieut.
Hayward, Hugh B., S/Sgt.
(Also AM & OLC)
Heffernan, Rollin B., Sgt.
Herron, James L., Sgt.
Holbert, George R., S/Sgt.
(Also AM & OLC)
Hughes, Jeptha F., Jr., Sgt.
Ingram, Virgil, Jr., Capt.
Jordan, Jay J., Lieut.
Jung, Ellsworth W., Cpl.
(Also AM & OLC)
Kadinger, Gilbert S., Lieut.
Lancaster, James W., Lieut.
Livingston, John W., Capt.
Mitchell, Robert A., Jr., Lieut.
Moberly, James A., Lieut. (Also DFC)
Patterson, Lloyd E., Lieut. (Also DFC)
Peterson, Chesley G., Lieut. Col.
(Also AM)
Shoop, Kendall, Sgt.
Stone, Edgar L., Cpl.
Thurston, Bernays K., Lieut.
Watson, Pete W., S/Sgt.
*Wenzyn, Felix S., Pvt.
*Whitehead, Allen B., Sgt.
*Wright, Thomas M., Pvt.
*Young, Virgil J., Pvt.

OAK LEAF CLUSTER TO PURPLE HEART

Bradshaw, Thomas E., Cpl.

DISTINGUISHED FLYING CROSS

Abb, Robert G., Lieut.
Abraham, William E., T/Sgt.
Abram, Robert V., Lieut.
Ackerman, Lonnie L., Sgt.
Adams, Norman C., Lieut.
Adelsburger, Lloyd E., S/Sgt.
Adkins, Henry L., Lieut.
Adrian, Arthur R., S/Sgt.
(Also AM & OLC)
Aiken, Albert Shelton, Capt.
Allen, Willett T., S/Sgt.
(Also OLC to AM)
Allison, Otis E., Lieut.
Allsop, Ronald J., S/Sgt. (Also AM)
Almy, Elmer O., S/Sgt.
Altman, Fredric G., Lieut.
Alvey, Joseph R., S/Sgt.
Amann, John R., Lieut.
Ames, Thomas E., S/Sgt.
(Also AM & OLC)
Amos, Lee H., T/Sgt.
Anderson, Stanley M. M., Lieut.
Anderson, Warren W., Lieut.
Anderson, William J., Lieut.
Anderson, William T., T/Sgt. (Also AM)
Andrews, Stanley O., Lieut.
(Also AM & 2 OLC)
Andrews, Thomas J., Capt.
(Also AM & 3 OLC)
Andrews, Vernon E., S/Sgt. (Also AM)
Armstrong, Robert L., Lieut.
Armstrong, Thomas F., Lieut.
Aronson, Lloyd, Lieut.
Arsenault, Larence J., S/Sgt.
(Also OLC to AM)
Asbell, Clarence E., Sgt.
Ashcraft, Hugh G., Lieut.
Ashinhurst, Thomas E., Lieut.
Athey, Carle T., Cpl. (Also AM & OLC)
Aubrey, Carl L., Lieut.
(Also 2 OLC to AM)
Averbeck, Forrest W., Cpl.
Axtell, Frank D., Pvt.
Aycock, Haley W., Capt.
(Also AM & 2 OLC)
Bagby, Edward L., Sgt.
Baird, Harley S., S/Sgt.
(With OLC, AM & OLC)
Baker, David A., Lieut.
(Also AM & 2 OLC)
Baker, Edwin C., Capt.
Baker, Roy E., Sgt. (Also AM & OLC)
Baldwin, James W., Lieut.
Ball, Edgar D., Lieut. (Also AM & OLC)
Ballard, Frederick J., Cpl.
(With OLC & 2 OLC to AM)
*Balsley, Lucius M., S/Sgt.
Baltes, John L., Sgt.
Banasiak, Francis S., Cpl.
(Also AM & OLC)
Barnett, Clyde H., Jr., Lieut.
Barr, John E., Col. (Also AM)
Barrett, John L., T/Sgt.
(Also AM & 3 OLC)
Barton, Bruce D., Capt.
Barton, Carl H., Lieut.
Bates, Eldon L., S/Sgt.
Beals, John T., Lieut.
Bean, Lyle Albert, Lieut.
Beary, Kermit Edwin, Lieut.
Beatty, John J., Jr., Cpl.
Bednarchuk, Antonio, S/Sgt.
Beeson, Duane W., Lieut.
(Also 3 OLC to AM)
Belden, Richard P., Capt.
Belk, Jack, S/Sgt.
Benbrooks, Lee A., T/Sgt.
(Also AM & 2 OLC)
Benn, William C., S/Sgt. (Also AM)
Benner, John G., Lieut.
(Also OLC to AM)
Bennett, Francis L., T/Sgt.
Bennett, Ravelle A., S/Sgt.
(Also AM & OLC)
Beringer, John L., Jr., S/Sgt.
Berry, Robinson B., T/Sgt.
Bertram, William E., Lieut. (Also AM)
Besly, Morris C., Sgt.
(Also AM & 6 OLC)
Best, Fred, J., T/Sgt. (Also OLC to AM)
Best, Jack R., Lieut.
Bicknell, Donald E., S/Sgt.
Billotte, John P., T/Sgt.
Bills, Ralph C., Lieut.
(Also AM & 2 OLC)
Birdsong, George P., Lieut.
Bishop, David B., Lieut.
Bissell, Clayton L., Maj. Gen.
(Also AM)
Black, William Emanuel, Jr., Lieut.
Blackwell, Westley V., S/Sgt.
(Also OLC to AM)
Blair, Floyd R., Sgt.
Blake, Robert C., S/Sgt.
(Also 3rd OLC to AM)
Blevins, Hilary M., Lieut. (& OLC)
Bley, Charles W., Lieut.
Bleyer, Julian M., Lieut. Col.
(Also AM & 2 OLC)
Blonshine, Leroy H., S/Sgt.
Blount, Wesley E., T/Sgt.
Blum, Franklin A., T/Sgt.
Boehle, Vernon A., Lieut.
(Also 2 OLC to AM)
Bogert, William D., S/Sgt.
(Also OLC to AM)
Boll, John J., Lieut. (Also OLC to AM)
Bolton, Willard L., Lieut. (Also AM)
Bong, Richard I., Capt.
(With OLC, AM & OLC)
Boock, Robert A., Lieut.
(Also AM & 3 OLC)
*Boone, Joseph W., Capt.
(Also OLC to AM)
Botuk, Charles, S/Sgt. (Also OLC to AM)
Boreen, Glenn W., T/Sgt.
Bouse, Roy, Sgt.
Bowen, Frank W., M/Sgt. (Also AM)
Bowker, Jack R., S/Sgt.
Bowles, Joe, T/Sgt.
Bowyer, Robert H., Lieut.
Boyle, John B., Jr., Cpl. (Also AM)
Boyles, Frank R., Lieut.
(Also OLC to AM)
Branch, Edward M., Lieut.
(Also AM & 5 OLC)
Brandt, Waldo B., S/Sgt.
Breen, John G., S/Sgt.
*Brill, Allen, Lieut.
Brinson, Sheldon S., Lieut.
(Also 2 OLC to AM)
Britton, William K., Lieut.
Brody, Harry J., S/Sgt.
(Also AM & 3 OLC)
Broussard, Eddie J., Jr., Capt.
Brown, Allen D., S/Sgt.
Brown, Ben S., Capt. (Also AM)
Brown, Loyal G., Lieut.
Brown, Richard T., S/Sgt.
(Also AM & 2 OLC)
Bryant, Carson, S/Sgt.
Bryant, William H., Lieut.
Buchanan, Bennet F., T/Sgt.
(Also AM & OLC)
Buchanan, Ralph E., Lieut.
(Also AM & 2 OLC)
Budzisz, Walter C., Sgt.
(Also AM & 3 OLC)
Bunce, Robert E., Sgt.
(Also AM & 6 OLC)
Burbridge, Ralph, Lieut.
(Also AM & 3 OLC)
Burch, Kenneth E., Lieut.
Burda, Theodore E., Lieut. (Also AM)
Burdick, Clyde R., S/Sgt.
Burges, George D., Lieut.
(Also 10 OLC to AM)
Burgess, William W., S/Sgt.
(Also AM & 2 OLC)
Burkey, Donald J., Lieut.
(Also 3 OLC to AM)
Burns, Francis J., S/Sgt.
Burns, Wilbert R., Sgt.
(Also AM & OLC)
Burton, Arnold L., S/Sgt.
Bush, Edwin R., Lieut.
Butler, Cecil W., Lieut.
Butler, Richard D., Lieut.
Butler, William C., Lieut.
Butterbaugh, Paul A., M/Sgt.
(Also 3rd OLC to AM)
Carlson, Arthur A., Jr., Maj.
Carroll, Albert V. H., S/Sgt.
Chastain, Austin D., S/Sgt.
Collins, Dealfred W., S/Sgt.
Compton, Harvey C., T/Sgt.
Cooper, Robert J., T/Sgt. (& OLC)
Copp, Buster B., S/Sgt.
Crawford, Cecil C., Lieut. (& OLC)
Cross, Frank E., T/Sgt.
Croswell, Felton H., S/Sgt. (& OLC)
Cuellar, Joe M., Jr., S/Sgt. (& OLC)
Current, Ronald E., T/Sgt.
Daly, Richard J., S/Sgt.
Davis, John Sidney, Capt.
Deeds, James A., Lieut.
De Freese, William A., S/Sgt.
Demont, Russell D., Lieut.
Dieffenbach, Albert W., Capt.
(Also AM & 2 OLC)
Diitz, Naum R., S/Sgt.
Dobson, John G., Lieut.
Duffy, Edward G., Capt. (& OLC)
Durham, Clarence W., S/Sgt.
Ebert, Harry W., Jr., Lieut.
Ellis, James G., Lieut.
Ethell, Ervin C., Lieut.
(With 2 OLC, AM & 3 OLC)
Evans, William T., Sgt.
(With OLC, AM & 3 OLC)
Everett, Wilbur R., Jr., Lieut.
(Also AM)
Fairlamb, Charles R., Maj. (Also AM)
Fanning, David D., T/Sgt.
Farrar, John W., Capt.
Fennell, Max R., Maj. (Also AM)
Filippi, Anthony, S/Sgt. (Also AM)
Fischer, Philip S., Lieut.
Flanary, Violes L., S/Sgt.

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*Posthumous

§ At the time of his death Mr. du Pont was Special Assistant to the Commanding General Army Air Forces, in charge of the AAF Glider Program.

S/Sgt. Eugene Light

Brig.Gen.J.H.Atkinson

Maj. J. W. Edmundson

Lt. H. G. Ashcraft

Lt. Col. C. G. Peterson

Maj. J. L. Jerstad

Foltz, John W., Lieut.
Fournier, George G., S/Sgt. (Also AM & 2 OLC)
Francis, Paul H., Capt. (With OLC & AM)
Gardinier, Russell J., Lieut.
Garrett, Frank D., T/Sgt.
Gauthier, Joseph A., Sgt. (Also AM)
Gibbs, Harry E., T/Sgt.
Giddens, Paul Owen, Sgt. (With OLC, AM & 3 OLC)
Gillette, Major R., Lieut.
Goza, James M., S/Sgt.
Grant, Donald L., Lieut. (Also AM & OLC)
Grant, Lawrence H., Lieut.
Gregory, Charles C., S/Sgt.
Gregory, Kermit E., T/Sgt.
Griffin, Edward L., Lieut. (Also AM)
Griggs, Charles A., S/Sgt. (Also AM)
Grobschmidt, Gilbert J., S/Sgt.
Guenther, Robert E., Lieut.
Guilfrd, Gerge W., T/Sgt.
Gutru, George H., Jr., Maj.
Hackney, Lewis E., S/Sgt. (Also AM)
Hall, Gordon E., Maj.
Hamill, Milton, T/Sgt.
Hardin, Daron, Lieut. (Also AM)
Harkeli, John A., T/Sgt. (Also AM)
Hastings, George L., S/Sgt.
Hawel, Leo, Lieut. (Also 3 OLC to AM)
Heaps, Theodore C., S/Sgt.
Heflin, Charles S., Lieut.
Heinitsh, Reginald D., Capt.
Helms, Robert W., Lieut. (Also AM)
Hennessey, Edward J., Jr., Lieut.
Heron, Kenneth, S/Sgt.
Hines, Joseph M., Sgt. (& OLC)
Hlastala, Michael S., T/Sgt.
Hodges, Pat H., S/Sgt.
Hoffman, Arthur E., Maj. (Also AM)
Hoover, James K., Lieut.
Hopkins, Allen V., Lieut. (Also AM)
Horine, Stanley M., Jr., S/Sgt. (& OLC)
Houlihan, Richard J., S/Sgt. (Also AM)
Houston, Rowland B., Lieut.
Huberty, Joseph S., Lieut. (& OLC)
Huggins, Gore, Capt. (Also AM)
Hulett, William O., Jr., S/Sgt.
Hurt, Eric, S/Sgt.
Hundley, Forrest D., S/Sgt.
Hussey, Lindley P., Lieut.
Irby, Shelby L., Lieut.
Israel, Carl T., Lieut.
Jaqua, Arnold D., Lieut.
Jenkins, Robert R., S/Sgt.
Joham, James E., Capt.
Johnson, Theron E., S/Sgt.
Jones, Grady H., Lieut. (Also AM & OLC)
Jones, Jearld H., S/Sgt.
Jones, John L., Lieut. (& OLC)
Joslin, John W., Lieut.
Jurosek, Bernard, Sgt.
Kennon, Dan, T/Sgt.
Ketron, Frank M., T/Sgt.
Kisamore, Leo R., F/O
Koch, Vernon E., S/Sgt.
Kolb, Ralph D., S/Sgt.
Koretke, Richard G., S/Sgt.
Krajcik, August J., S/Sgt.
Lalli, Michael, Lieut.
Lanigan, Edwin J., Lieut. *(Also AM)
Leisinger, William L., Jr., Sgt.
Lemoine, Earle P., S/Sgt.
Light, Herbert M., Lieut.
Lucier, Philip H., Lieut.
McAdams, Robert C., T/Sgt.
McAtee, John E., Lieut. (& OLC)
McCabe, Larry M., S/Sgt.
McCallum, Robert, Lieut.
McCown, Bobby E., T/Sgt. (& OLC)
Martin, Prince A., T/Sgt.
Meddaugh, Allerton F., Jr., S/Sgt.
Mercer, William D., T/Sgt.
Meyer, Kenneth V., T/Sgt.
Miller, Marshall W., S/Sgt.
Minder, William Howard, Lieut. (Also AM & OLC)
Morales, Carl H., Capt. (Also AM)
Nelson, John W., T/Sgt.
Nichols, Edgar S., S/Sgt.
Ormand, Waverly C., T/Sgt.
Pace, John R., Lieut.
Palmer, Philip T., Lieut.
Panaro, Leonard A., T/Sgt.
Papas, Peter W., S/Sgt.
Payne, Elbert, S/Sgt.
Perry, Alton M., S/Sgt. (& OLC)
Pezzella, Alfred W., Lieut.
Pfund, Melvin G., Capt. (Also AM)
Pierce, Baxter B., Lieut.
Pilote, Norman R., Lieut.
Pyle, Clifton, Capt.
Quillman, Earl W., Lieut.
Ramsey, Homer B., T/Sgt.
Reed, John Young, Lieut.
Redding, Rylan C., Lieut.
Reinhardt, Earl H., S/Sgt. (Also AM & OLC)
Reitz, Arthur D., Lieut.
Riddle, Alpheus H., S/Sgt.
Rio, Howard, S/Sgt.
Roberts, Claude C., T/Sgt.
Roll, Thomas B., Lieut.
Rosato, Theodore A., S/Sgt.
Rumsey, Jack H., Lieut. (& OLC)
Schmid, Leander F., Capt. (& OLC)
Schneiderman, Henry G., S/Sgt.
Sheetz, Homer O., S/Sgt.
Simpson, Jerome C., Lieut.
Sisson, Dale L., Lieut.
Smith, Albert T., S/Sgt.
Smith, Cecil B., S/Sgt.
Snyder, Charles H., S/Sgt.
Sorensen, Walter M., Lieut.
Spann, Leo G., T/Sgt.
Stephen, Willard W., S/Sgt.
Sterling, Robert W., S/Sgt.
Stewart, John E., Capt. (& OLC)
Stewart, Raymond E., Sgt.
Stilwell, Lewis B., Lieut.
Storer, Charles B., S/Sgt.
Streets, Henry J., S/Sgt.
Stukey, Frederick L., Jr., S/Sgt. (& OLC)
Thayer, David S., Lieut.
Tubb, Walter F., Lieut.
Vaden, Preston E., Lieut.
Vande Bogart, Warren M., Lieut. (Also AM)
Walker, Clyde B., Lieut. (Also AM)
Walker, Robert A., Lieut. (& OLC)
Ward, Joe F., S/Sgt.
Warren, Russell M., T/Sgt.
Whipple, Harlen D., Lieut.
White, John B., Lieut.
Williams, Paul V., Lieut.
Wilson, John D., Lieut.
Yaussi, Frank D., Capt.
Zasadil, Frank E., Lieut. (Also AM).

OAK LEAF CLUSTERS TO DISTINGUISHED FLYING CROSS

Anderson, Alf Lester, Cpl. (3rd; & AM)
Arneth, John P., Sgt. (Also AM)
Arnzen, Cyril H., Pvt. (Also AM & OLC)
Arts, Henry F., Jr., S/Sgt. (2nd; AM & 2 OLC)
Ashley, Burl S., F/O (3rd)
Atkinson, Joseph H., Brig. Gen. (Also 4th OLC to AM)
Awtrey, Elmer F., Cpl. (Also AM)
Bailey, John D., Lieut. (Also AM & OLC)
Baker, Leonidas, Capt.
Ballantine, John V., Pvt. (Also AM & OLC)
Barnes, Charles G., Sgt.
Bates, James W., S/Sgt. (2nd; AM & OLC)
Baynes, Edward E., S/Sgt. (Also 3rd OLC to AM)
Beadle, Frank R., Lieut.
Beebe, Robert C., Capt. (Also AM)
Bergquist, Jesse D., S/Sgt. (Also AM)
Berryman, Lester C., Pfc. (Also AM & OLC)
Billmaier, Lawrence P., Cpl.
Boettcher, Wendell D., Lieut. (2nd; Also AM & OLC)
Bogacki, Gerald J., Pfc. (2nd: Also AM & OLC)
Bonito, Frank L., Cpl. (Also AM & OLC)
Borchert, Robert F., Cpl. (Also AM)
Bronson, Hubert S., Lieut. (2nd; Also AM & OLC)
Bullock, James R., Lieut.
Burleigh, Albert H., Lieut. (2nd; Also AM & OLC)
Burnside, Barrie Charles, Lieut. (Also AM)
Burr, Albert H., Lieut. (2nd; Also AM & 2 OLC)
Joyner, William R., Lieut. (Also AM)
Merrell, Robert W., Lieut.
Ryan, John C., Lieut.
*Sewart, Allan J., Jr., Maj.

SOLDIER'S MEDAL

Beattie, Franklin E., S/Sgt. (Also OLC to AM)
Brouhard, Lawrence H., Sgt.
Brown, Emory O., S/Sgt.
Emens, Justus A., Capt. (Also AM & OLC)
Freyberger, Donald L., S/Sgt.
Harrell, Samuel J., M/Sgt.
Kinley, Walter E., S/Sgt.
Notz, Matt F., T/Sgt.

OAK LEAF CLUSTER TO SOLDIER'S MEDAL

Bongyor, Kalman P., Sgt.

AIR MEDAL

Abrams, James R., Lieut. (& OLC)
Adams, Edward Bowie, Lieut.
Adams, William H., S/Sgt.
Adams, William M., Lieut. Col.
Aldridge, Leroy A., Sgt.
Allen, Donald S., S/Sgt. (& 2 OLC)
Allen, John T., Lieut. (& OLC)
Alspaugh, Kenneth L., Lieut. (& OLC)
Amory, Charles M., Lieut. (& OLC)
Anders, Virgil M., Lieut.
Anderson, Charles S., Sgt.
Anderson, James L., T/Sgt. (& OLC)
Anderson, Karl W., S/Sgt. (& OLC)
Andreas, Nicholas J., T/Sgt.
Andrews, Dorn R., Sgt.
Andrews, John, Capt.
Anholt, Dean H., S/Sgt.
Applegate, Rex A., Sgt. (& OLC)
Arter, Theodore III, Capt
Baceski, Edward J., Lieut.
Bacon, Harvey S., Cpl. (& OLC)
Bailey, J. C., Maj.
Baker, Gordon, W/O
Baker, Jess Francis, Lieut. (& 3 OLC)
Barrett, Garland P., S/Sgt.
Barrett, Richard L., S/Sgt.
Bartlett, George H., Lieut.
Bass, Samuel B., Lieut.
Bates, William S., Sgt.
Bauer, Clarence E., Sgt. (& 3 OLC)
Baughman, Kenneth D., Lieut. (& 3 OLC)
Bayer, Emil J., S/Sgt.
Bazemore, Howard M., Lieut.
Bean, Hazen R., Capt.
Beck, Howard Alfred, Capt.
Beimdiek, Arthur O., Lieut. (& 2 OLC)
Beistel, Eugene F., Sgt.
Bellows, Donno C., Lieut. (& OLC)
Belzowski, Frank J., Sgt. (& 3 OLC)
Benn, William G., Maj.
Bentley, Charles T., Sgt.
Berenson, Morris, Lieut. (& 3 OLC)
Bestgen, Walter E., Lieut. (& 2 OLC)
Beyeler, Roy F., S/Sgt.
Bigelow, Arthur H., S/Sgt.
Bigham, James H., Cpl.
Bing, Andrew J., Capt. (& 3 OLC)
Birdsong, Neil P., Sgt. (& 4 OLC)
Bishop, Leichester B., Lieut. (& OLC)
Blackwelder, A. G., Jr., T/Sgt.
Blair, Alexander, Jr., Lieut. (& 7 OLC)
Blanco, Edmundo, S/Sgt. (& OLC)
Blanton, Nathaniel H., Capt.
Blomquist, Oscar M., Capt. (& 3 OLC)
Bogert, James H., Lieut. (& 2 OLC)
Booth, Frank W., S/Sgt. (& 2 OLC)
Borders, Thomas H., Lieut. (& 2 OLC)
Bouchard, Real, S/Sgt. (& OLC)
Bowland, Charles F., Pfc. (& OLC)
Boyce, James H., Jr., Lieut. (& OLC)
Bradley, Merel D., Sgt.
Bradley, William B., Cpl.
Braemer, Fred A., M/Sgt.
Bragg, Jim L., T/Sgt. (& 2 OLC)
Brakefield, Woodrow W., Cpl.
Bramlett, Harvey J., T/Sgt.
Breedlove, Edwin M., S/Sgt. (& 3 OLC)
Breedlove, Richard D., S/Sgt. (& OLC)
Brehme, Carl H., T/Sgt.
Brewster, William J., T/Sgt. (& 2 OLC)
Bridge, John U., Lieut.
Briggs, Loran D., Maj.
Bright, Roy R., Capt.
Brinkley, Lee R., Sgt.
Britt, Charles F., M/Sgt.
Brocker, Norbert T., Lieut. (& OLC)
Brohme, Peter E., Capt.
Brooks, William M., Sgt. (& 3 OLC)
Brown, Fred F., T/Sgt. (& 2 OLC)
Brown, Houston B., Jr., T/Sgt. (& 2 OLC)
Brown, Leslie R., Sgt.
Brown, Reuben J., Lieut. (& 2 OLC)
Brown, Russell D., S/Sgt.
Brown, William A., Capt.
Brunnet, Arthur, Sgt. (& OLC)
Brynan, Julius, T/Sgt.
Buda, Adolph, S/Sgt.
Burger, Elmer L., Sgt. (& 3 OLC)
Burgess, Don L., Lieut.
Burgess, Paul B., Sgt. (& OLC)
Burnett, Paul C., Lieut.
Burroughs, Hulbert, Lieut.
Burton, Thomas G., Sgt. (& OLC)
Butler, James E., Lieut. (& 3 OLC)
Butzu, John S., S/Sgt. (& OLC)
Bylotas, Edward R., Cpl.
Byrd, Joe C., Lieut.
Cadle, Clifford E., S/Sgt. (& 2 OLC)
Calhoun, William R., Jr., Capt. (& OLC)
Campbell, Louie B., Sgt.
Card, Robert G., S/Sgt. (& OLC)
Caron, Alfred L., Cpl.
Carroll, Bernard, S/Sgt.
Casey, Francis V., Lieut. (& 3 OLC)
Casoria, Michael, S/Sgt.
Castellotti, Julio G., S/Sgt.
Cauble, William R., S/Sgt.
Cauffiel, Daniel W., Sgt.
Chalfant, Dale C., T/Sgt.
Chalmers, Robert M., Lieut.
Champion, John Homer, Lieut.
Chapman, Thomas J., T/Sgt.
Chase, Allan C., Lieut.
Check, Raymond J., Lieut.
Chialastri, Lawrence, S/Sgt.
Christensen, Frank G., Sgt. (& 3 OLC)
Church, Frank C., Capt.
Clark, Walter, Capt.
Clements, Pruitte L., T/Sgt. (& 2 OLC)
Clemmenson, Gerald O., S/Sgt.
Cline, Wallace C., Lieut. (& OLC)
Cluck, Clarence A., Sgt. (& 3 OLC)
Cochran, Paul, Lieut. (& OLC)
Cochran, William W., S/Sgt.
Cohen, Ephraim B., Maj.

Lt. John C. Ryan

Lt. S. O. Andrews

Lt. J. E. Bloomhuff

Maj. C. E. Murray

Col. Hubert Zemke

Maj. Ralph Cheli

Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

Colberg, Raymond T., S/Sgt.
Cole, Oliver C., S/Sgt.
Coleman, Elmer L., M/Sgt. (& OLC)
Coleman, Melvin M., Lieut.
Coleman, Robert L., Capt.
Collins, Jack L., S/Sgt.
Connors, Wayne S., Capt. (& 3 OLC)
Cook, Howard Gorden, Capt. (& 3 OLC)
Cook, Max J., Lieut.
Cooley, Calvin L., Lieut.
Coomes, Clarence S., S/Sgt. (& 2 OLC)
Cooper, Samuel L., Jr., Sgt.
Cornett, Alwyn E., S/Sgt.
Corwell, Gardiner, Jr., Lieut.
Counts, Charles M., S/Sgt. (& 3 OLC)
Cowart, Stanley L., Sgt. (& OLC)
Cowherd, Ford C., S/Sgt. (& 3 OLC)
Crabtree, Martin P., Maj. (& 3 OLC)
Dallas, Frederick, Jr., Capt.
Dalton, Bradford E., Lieut. (& 2 OLC)
Danley, Harold G., S/Sgt.
Darby, Culmer H., Sgt. (& 3 OLC)
Davidson, William K., Lieut.
Davis, Everett, Capt.
Davis, Norman, Lieut.
Deer, Maxie G., Jr., Lieut.
De Ford, Earl, Col.
Demars, Rodney E., T/Sgt. (& OLC)
Demuth, Edward L., Sgt. (& 2 OLC)
Detjens, Herbert P., Lieut. (& OLC)
Dickey, Eugene D., Lieut.
Dingus, Charles H., Lieut.
Dobbs, Guy T., Lieut.
Dougherty, John E., Maj. (& OLC)
Downing, Joseph A., Lieut.
Drake, Nicholas R., Lieut. (& 2 OLC)
Dreiseszun, Abraham J., Lieut. (& 3 OLC)
Drew, Raymond W., S/Sgt.
Drougas, John J., Sgt. (& 3 OLC)
Drummond, William J., Sgt.
Dunn, Douglas Samuel, Lieut. (& 3 OLC)
Dunn, James W., Lieut. (& 3 OLC)
Dustin, George W., Cpl.
Dutton, Albert H., Lieut.
Earls, Charles C., S/Sgt.
Easter, James L., Lieut.
Edris, Warren P., Lieut.
Edwards, Theodore N., Cpl.
Elder, Henry M., S/Sgt.
Elliott, Robert F., Lieut.
Ellis, Jess W., T/Sgt. (& OLC)
Eskridge, Ladson G., Jr., Lieut. Col.
Estes, Chandler B., Lieut.
Eubank, Robert H., Lieut. (& 3 OLC)
Evans, Redmond, Lieut. (& 3 OLC)
Ewing, William N., Sgt. (& 3 OLC)
Falls, Charles E., Sgt.
Fanning, John E., S/Sgt.
Farrar, James B., S/Sgt. (& 3 OLC)
Faust, Richard E., S/Sgt.
Ferguson, Eugene R., Pvt.
Ferguson, James A., Lieut.
Ferguson, Roger W., Cpl.
Fernsler, John Ewig, Capt.
Fetrom, Richard V., S/Sgt. (& 2 OLC)
Fetty, James C., Jr., S/Sgt.
Finch, Stanley, Sgt. (& 3 OLC)
Finlay, Thomas P., Lieut. (& OLC)
Fish, Robert W., Capt.
Fisher, James F., S/Sgt.
Flanagan, Martin P., Sgt.
Fletcher, Ralph, S/Sgt.
Fluery, Paul A., Capt.
Flynn, Thomas V., Lieut.
Forand, Bernard J., Sgt.
Forbes, Joe D., Sgt. (& 2 OLC)
Ford, Wilson, M/Sgt. (& 2 OLC)
Foster, Curtis J., Sgt.
Foster, Irwin, Lieut.
Foster, William W., Jr., Capt.
Fowler, Thomas R., Lieut.
Francis, Joseph S., Sgt. (& 2 OLC)
Franklin, Reedas G., Sgt.
Fredericks, Lewis J., S/Sgt.
Freeman, Rodney, Capt.
Freyer, George F., Lieut. (& 2 OLC)
Frizzie, Bernard E., Capt. (& OLC)
Fry, Charles J., S/Sgt.
Fuchs, Ray G., Lieut.
Fuhrmeister, Ralph, Lieut. (& 3 OLC)
Gahley, James B., Sgt. (& 2 OLC)
Galloway, Claude F., Lieut.
Gardner, James F., Lieut. (& 2 OLC)
Garr, Bruno A., Lieut.
Garrot, Oard, Lieut. (& 3 OLC)
Gathers, George W., S/Sgt.
Geimer, John R., S/Sgt.
Gerteis, Homer M., S/Sgt.
Gerzin, Walter J., Lieut.
Geshay, Richard J., S/Sgt.
Gibson, Edward C., T/Sgt.
Giles, Benjamin F., Brig. Gen.
Gilson, Vance E., S/Sgt.
Goebel, John A., Lieut. (& 3 OLC)
Golberg, Robert T., Lieut.
Goncher, Bernard A., Lieut. (& 3 OLC)
Goodson, James A., Lieut. (& OLC)
Gott, Keith E., Sgt.
Gottfried, Mario H., Lieut.
Gourley, Jack, Lieut.
Goyan, Fred F., Sgt.
Grace, John J., S/Sgt. (& 3 OLC)
Grady, Martin T., Cpl.
Gray, Carl R., S/Sgt.
Gray, Russell E., Capt.
Greene, Herbert G., T/Sgt.
Greene, Robert H., Lieut. (& OLC)
Gribble, Ernest R., T/Sgt.
Grice, Charles R., Lieut.
Grim, Robert A., Sgt. (& 3 OLC)
Gross, Harvey A., Lieut.
Gross, Luther M., Sgt.
Guilbeau, Baker J., S/Sgt.
Guth, Joseph L., Sgt.
Guthridge, Charles B., Capt. (& 3 OLC)
Guzick, Sidney, Lieut.
Hall, Alvin G., S/Sgt.
Hadden, Will A., Lieut. (& 2 OLC)
Hagan, Clark D., S/Sgt.
Hale, Laurence E., Sgt. (& 3 OLC)
Hall, Earl W., S/Sgt.
Hall, Stanley E., Lieut. (& 2 OLC)
Hamilton, James O., Sgt. (& 2 OLC)
Hand, Clarence B., Lieut.
Hansen, Carl L., S/Sgt.
Hape, Herbert M., T/Sgt. (& 2 OLC)
Happel, James R., Lieut. (& OLC)
Harder, Milton B., S/Sgt.
Hardesty, Edwin H., S/Sgt.
Harding, John B., Lieut. (& 2 OLC)
Hardman, Roscoe I., T/Sgt. (& OLC)
Hare, Richard L., T/Sgt. (& 3 OLC)
Harling, Tom J., S/Sgt.
Harrington, John D., Capt.
Harris, James Daniel, Sgt. (& 3 OLC)
Harris, Tommie T., T/Sgt.
Hart, John M., Lieut. (& OLC)
Hart, Joseph H., Sgt. (& OLC)
Hartzie, Armond C., T/Sgt.
Hatfield, Melvin E., S/Sgt.
Hatley, Sherman R., Sgt. (& 3 OLC)
Hatten, Audis W., Lieut.
Haugen, Marshall B., T/Sgt. (& 2 OLC)
Hawkins, John G., Lieut. (& 2 OLC)
Hayes, Henry R., Lieut.
Hayes, Joseph C., S/Sgt.
Heard, R. Townsend, Col.
Heartwell, Robert H., Capt.
Hebert, Andrew, Lieut.
Hebert, Maurice E., Lieut. (& OLC)
Heflin, Clifford J., Maj.
Helfert, Marvin W., Lieut.
Helsabeck, Chester Joseph, Lieut. (& 2 OLC)
Henn, Raymond J., S/Sgt. (& 3 OLC)
Herbert, Robert D., Jr., Capt.
Herman, Lawrence A., Lieut.
Herring, Charlie R., M/Sgt.
Herzog, Joe G., S/Sgt.
Hester, Orville R., Sgt. (& 2 OLC)
Hewett, Henry B., Lieut. (& OLC)
Hewitt, Francis A., T/Sgt.
Hickey, Charles H., Lieut. (& OLC)
Hickman, Jack C., S/Sgt. (& OLC)
Highsmith, William T., Sgt. (& 3 OLC)
Hight, Gordon L., Jr., Lieut.
Hill, Robert D., Lieut.
Hill, Warren C., S/Sgt.
Hinton, Joe K., Capt.
Hobert, Robert, Lieut. (& OLC)
Hodges, Kenneth S., Capt.
Holloway, Harry, Jr., S/Sgt.
Holmes, William W., T/Sgt.
Holsey, James F., T Sgt.
Holzapfel, William J., Jr., Lieut. (& OLC)
Homan, John E., S Sgt.
Hooper, Robert L., S/Sgt. (& OLC)
Hoover, Edward E., S/Sgt.
Hopkins, Vernon P., S/Sgt.
Hopson, Alfred H., Capt. (& OLC)
Horn, William P., Jr., Lieut.
Houx, George L., S/Sgt.
Howe, Eugene L., T/Sgt.
Howell, Richard H., T/Sgt.
Howell, Winfred D., Lieut.
Huff, Roger W., Lieut.
Hummel, Wilbur F., Sgt.
Hunter, Carl W., S/Sgt. (& 2 OLC)
Hunter, John S., Jr., Lieut.
Hurlburt, Donald W., Lieut.
Hursey, Melvin R., T/Sgt.
Hutchins, Ralph, Lieut.
Hyde, Gordon R., Maj.
Irby, James R., Lieut. (& 2 OLC)
Ireland, Loren E., Maj.
Johnson, Dayton R., M/Sgt.
Johnson, Edward F., Sgt. (& 3 OLC)
Johnson, Herbert E., Jr., Capt. (& 2 OLC)
Johnston, David W., Jr., S/Sgt. (& OLC)
Jones, G. J., Lieut.
Jones, Marion D., Jr., Lieut. (& 2 OLC)
Jones, Robert S., Jr., T/Sgt. (& 2 OLC)
Jones, Russell K., Sgt. (& 3 OLC)
Jones, Stanley B., Capt.
Jones, William L., S/Sgt. (& OLC)
Jones, William O., Lieut.
Jorgensen, Glade, Lieut.
Joy, William M., Capt.
Jurgensmier, Paul E., S/Sgt.
Kane, John Roger, Col.
Karp, Arthur D., Lieut.
Kate, Hendrik, Jr., T/Sgt. (& OLC)
Kay, Marvin Edward, Lieut.
Kealey, Christopher R., S/Sgt.
Kegelman, Charles C., Maj. (& 3 OLC)
Keith, Troy, Lieut. Col. (& OLC)
Kellar, Douglas H., Capt.
Keller, Daniel J., S/Sgt.
Kelly, Walter Earl, Lieut. (& 3 OLC)
Kessler, Leland J., S/Sgt. (& OLC)
Kessler, Robert, S/Sgt.
Kidd, Venson, S/Sgt.
Kilborn, Thomas E., S/Sgt.
Kimball, Melvin B., Lieut.
King, Clarence E., T/Sgt.
Kirk, Noah C., T/Sgt.
Kirk, Norbert W., Lieut. (& 2 OLC)
Kiss, Ernest J., T/Sgt. (& OLC)
Kjerulff, Lauritz T., Lieut.
Kleeman, Lawrence L., T/Sgt.
Kleiman, Joel N., Lieut.
Knapp, Ralph L., Capt. (& 3 OLC)
Knight, Seymour G., Lieut.
Knisley, John L., S/Sgt.
Koenig, Bernard H., T/Sgt. (& 2 OLC)
Koon, William V., Jr., T/Sgt.
Krisher, Elwood C., Lieut.
Krumm, Clifford B., S/Sgt.
Kurz, Herbert, Lieut.
Lacy, Albert J., Capt.
Lada, Michael, Lieut.
Lambert, Raymond E., Jr., S/Sgt. (& OLC)
Lampley, James B., Lieut.
Lapp, Eldon R., Sgt. (& OLC)
Larson, George E., S/Sgt.
Lassor, Harold E., Sgt.
Laven, George, Jr., Capt.
Lawrence, John M., Cpt.
Lawrence, Paul E., T/Sgt.
Le Fevre, William G., Lieut. (& OLC)
Lehman, Victor R., S/Sgt.
Lewis, William, Jr., Maj.
Light, Eugene, S/Sgt. (& OLC)
Ljunggren, Ernest N., Maj.
Logan, Daniel C., Lieut. (& OLC)
Lombard, John D., Maj. (& OLC)
Loutrel, John M., Lieut. (& OLC)
Luber, Vernon N., Capt.
Luke, William E., Lieut.
Lund, Roy N., S/Sgt.
Lundy, Robert M., S/Sgt.
Lyster, David K., Jr., Capt.
McCarthy, Kenneth C., S/Sgt.
McClure, Kenneth N., S/Sgt. (& OLC)
McCormack, John J., T/Sgt.
McCormack, William D., S/Sgt.
McDaniel, Hervey A., Jr., Capt.
McGee, Donald C., Lieut. (& OLC)
McGehee, Alvin E., Lieut.
McGreevy, Wallace F., Lieut. (& OLC)
McKeown, Glen E., Lieut. (& OLC)
McNeice, George E., Lieut.
Madden, Robert W., Sgt.
Magri, James F., Cpl.
Mallard, Robert S., Sgt.
Manchester, Donald D., Lieut. (& 2 OLC)
Maragioglio, Salvatore S., Pvt.
Mark, John, Lieut. (& 3 OLC)
Marks, Leonard P., Capt.
Martin, Charles A., Capt.
Martin, Donald O., T/Sgt. (& OLC)
Martin, Harold G., T/Sgt.
Mathis, Benjamin B., Lieut.
Matranga, Leo V., S/Sgt.
Matthews, Winton E., Lieut.
Maucher, Robert A. Capt.
Maxwell, Hugh D., Jr., Lieut.
May, Billy J., Sgt.
Mead, Benjamin A., Lieut.
Meigs, Hiram W., T/Sgt.
Merritt, Hosey W., S/Sgt.
Mersereau, Lawrence R., Lieut.
Michalak, Joseph E., Sgt.
Miley, Carl H., Capt. (& OLC)
Mills, Henry L., Lieut. (& OLC)
Mitchell, John W., Maj.
Moe, Joel O., Lieut.
Moffitt, Hugh A., Jr., Lieut.
Moore, John L., Lieut.
Morgan, Don F., S/Sgt. (& OLC)
Morris, Cleon G., Sgt. (& OLC)
Morrison, John P., S/Sgt.
Mugele, Charles P., Lieut.
Mullin, Vernon Q., Maj.
Musick, William, S/Sgt.
Myers, Robert A., Lieut.
Naglich, John W., Jr., Cpl.
Naperkoski, Stanley W., S/Sgt.
Nelson, Jack L., Pvt.
Newkirk, Cecil, S/Sgt.
Niess, Harry A., T/Sgt.
Nock, Glen M., T/Sgt.
Norman, William P., Pfc.
O'Connor, Squire T., Lieut. (& 2 OLC)
Oliver, Richard E., Lieut.
Ortiz, Ralph P., Lieut. (& OLC)
Page, Hal B., Sgt.
Palmer, Daniel J., Lieut.
Pedrone, John G., T/Sgt.
Pelepchuk, William, Lieut.
Penn, Loyal T., Capt.
Penwarden, Leroy H., S/Sgt.
Peterson, Kenneth D., Lieut. (& OLC)
Peterson, Oscar S., T/Sgt.
Phelan, Hugh E., Lieut. (& OLC)
Phillips, Arthur G., Lieut.
Pillsbury, Stanley C., Sgt.
Pixley, Sherland O., Pfc.
Poole, William A., Lieut. (& OLC)
Pope, Jack G., S/Sgt.
Pope, James E., Lieut.
Posten, John Herbert, Capt.
Poteet, Ellis J., M/Sgt.
Potter, Donald J., S/Sgt.
Powell, Harvard W., Maj.
Prohaska, Joseph M., Lieut.
Pugh, Carl L., S/Sgt. (& OLC)
Ramsey, Frederick L., S/Sgt.
Raper, William S., Capt. (& OLC)
Reichert, Earl, Lieut.
Reinerth, George A., Lieut. (& OLC)
Renick, Reed, Sgt.
Reynolds, Franklin T. E., Capt.
Reynolds, William H., Cpl.
Riberdy, Victor C., T/Sgt.
Richardson, Wardie W., T/Sgt.
Richmond, Arthur L., Lieut. Col.
Ripple, Joe W., S/Sgt.
Rogers, Charles J., T/Sgt.
Rosenberg, Hyman P., T/Sgt.
Ross, Don H., Lieut. (& OLC)
Roth, Philip, Jr., T/Sgt.
Rudolph, Bestow R., Lieut.
Rugruden, Clyde H., Lieut.
Rutledge, Jay D., Jr., Lieut. Col. (& OLC)
Saffron, Paul, S/Sgt.
St. Clair, Rodman A., Lieut.
Sandie, Sydnie L., Sgt. (& OLC)
Sargent, John W., Sgt.
Sbarra, Daniel N., Sgt.
Scanlan, John F., Capt.
Scearce, Lester H., Jr., T/Sgt.
Schichner, Leroy A., S/Sgt.
Schlotte, Robert W., S/Sgt.
Schneider, Edward J., Cpl.
Scholar, Leslie H., Lieut. (& OLC)
Schwimmer, Daniel B., Lieut.
Scolnick, Nathan, Lieut.
Sellers, Willard E., S/Sgt.
Selvig, Herman E., Sgt.
Sheaffer, Abram B., Lieut. (& OLC)
Shelly, Jay F., Lieut. (& OLC)
Shepperd, Virgil E., Lieut.
Simpson, Marvin R., S/Sgt.
Smith, Fonzo L., Lieut. (& OLC)
Smith, Garnet, S/Sgt.
Smith, Melvin H., S Sgt.
Sobanski, Winslow, Lieut. (& OLC)
Spaulding, Scott, T/Sgt.
Speake, Fred M., Jr., Lieut.
Stanhope, Aubrey C., Lieut. (& OLC)
Stein, Frederick P., Lieut.
Stephenson, Andrew J., Lieut. (& OLC)
Stevenson, Robert L., T/Sgt. (& OLC)
Stockton, Daniel H., Jr., Sgt.
Stout, Albert G., Jr., Lieut.
Stubblefield, Karl C., Lieut.
Suffenberger, Harry A., T/Sgt.
Suskind, Saul, T/Sgt. (& OLC)
Taylor, Charles M., S/Sgt.
Teer, Charles R., Lieut.
Temple, John A., Lieut.
Terry, William B., Sgt.
Teykl, Irvin F., Lieut. (& 2 OLC)
Thiele, Harold E., Capt.
Thompson, Woodford R., Jr., Lieut. (& OLC)
Throop, Montgomery H., Lieut. (& OLC)
Thun, Charles E., T/Sgt. (& OLC)
Tiffany, Edward F., Lieut.
Totty, Louis B., T/Sgt.
Tresemer, Edward C., Lieut.
Tucker, Donn, T/Sgt. (& 2 OLC)
Tunstall, Donald, Sgt.
Turlo, Whadislas, S/Sgt.
Turner, John R., Jr., Capt.
Vailancourt, Vivian W., M/Sgt.
Van Dyke, John L., Lieut. (& OLC)
Villemarette, Raymond, Lieut.
Wagner, Wilfred W., Capt.
Walker, Donald G., Lieut.
Ward, Elmer L., Lieut.
Ward, Robert B., Lieut. (& OLC)
Washburn, Jack, Lieut. (& OLC)
Watson, Harold E., Jr., Lieut.
Westberry, Ernest, T/Sgt. (& OLC)
Whidden, Jack D., Capt.
Wierschem, Robert J., Sgt.
Wildinger, Joseph V., Capt.
Williams, Alfred H., Sgt.
Williams, Grover C., Jr., S/Sgt. (& OLC)
Williamson, Joel T., Sgt.
Wilson, Charles V., Lieut.
Wingard, Joseph O., Sgt.
Wishbaum, Thomas W., Sgt.
Young, Donald A., Lieut.
Yozgadlian, Edward, T/Sgt. ☆

Lt. R. W. Merrell

Maj. G. S. Brown

Lt. L. D. Slessor

Col. Edward Backus

Maj. A. W. Fletcher

Lt. Earl Reichert

By Brig. Gen. S. C. Godfrey

THE AIR ENGINEER

GENERAL ARNOLD has said that an air force is made up of three vital elements—flying men, flying machines, and air bases. Today our chain of air bases extends around the world. In some theatres the war is literally a contest for the possession of air bases.

The building of airdromes has been an engineering job of top priority for Army engineers in all theatres. Naval "Seabee" battalions likewise have made it a major task. Thousands of native laborers with hand tools have added their efforts.

The Army Air Forces look primarily to their own airdrome-builders, the Aviation Engineers. A recent trip to seven theatres has given me a chance to see a hundred airdromes and some fifty aviation engineer battalions. I have seen them building runways from sand and sea water, from coral and volcanic ash and iron ore, in desert and jungle. Every conceivable time-saving device, such as the steel landing mat, is used to get the job done in a hurry. Two days after the Fifth Army landed at Salerno, a fighter field was ready in that narrow beach head, fearfully dusty but nonetheless usable by the fighters that were giving much needed support to the troops on shore. I have seen one complete fighter field built in a spot accessible only by air.

Some of the most interesting observations on my 45,000-mile air tour of combat theatres are worth passing on to other AAF personnel. Theatre by theatre, here are some impressions of the work of our aviation engineers:

England— Essentially one vast airdrome, the British Isles have a relatively standardized type of dispersed airfield. Chief among the differentiating characteristics is that the hard-stands, instead of resembling the cherry blossom type, are turn-outs like railroad sidings. This eliminates the necessity of big bombers having to make 180-degree turns, thus facilitating "marshalling" and take-offs.

Runways, taxi tracks and hard-stands are of concrete. Construction work on many new American fields is being performed by our aviation engineers, under the control of the Army Service Forces.

Photographs by the author and official AAF Photographers

North Africa-Sicily — The story of airdrome construction in this theatre was ably discussed by General Davison in the October issue of AIR FORCE, so only a few additional impressions will be passed on.

During the invasion of Sicily, our aviation battalions moved in progressively and on the third day were at work on the excellent Italian field of Ponte Olivo, removing mines that the Italians had planted and filling craters. Other fields were captured and rehabilitated in rapid succession until, after the first week or two, our fighter squadrons were well established in their newly won quarters. One of our aviation battalions built a flight strip on a Naval LST lighter to provide an operating base for liaison planes during the first days of the invasion.

Prior to the actual invasion of Sicily, another aviation engineer unit almost landed on Sicily instead of Malta, where they were headed to construct an additional fighter field. On a rocky island near Malta, with eight bulldozers and graders, this company built an airdrome with two 4,500-foot runways in two

Although the Chinese have to quarry, crush, transport and lay the rock by hand, they succeed in constructing excellent runways of stone, two feet thick. The bed is cemented with a paste of mud.

weeks. The RAF had requested that this job be completed in three weeks. The British were so appreciative of the speedy work that a special dinner for the aviation engineers was given, with an air vice marshal and an air commodore in attendance.

At Bengasi, the engineers were stabilizing their sand runways, some with asphalt, others with a sea-water treatment. Thousands of gallons were pumped from the Mediterranean into tanks, and with proper mixture and compaction the sand was hardened to provide a stable runway for use by heavy bombers.

India — Construction of concrete runways by the Indians is a long and tedious process. Rock crawls in by train on overcrowded railways.

The concrete is mixed by hand and carried in baskets. Long lines of women leisurely pass the concrete baskets from one to another until the laborer on the end of the line dumps it into the forms. These laborers work under native contractors who are employed by the British. The whole tempo is painfully slow from our western viewpoint.

Now, however, American engineer troops with our unrivalled equipment are on the ground and are speeding up the task. New fields in Assam have been built with the help of steel landing mats. Aviation engineers also have helped in building a road into Burma.

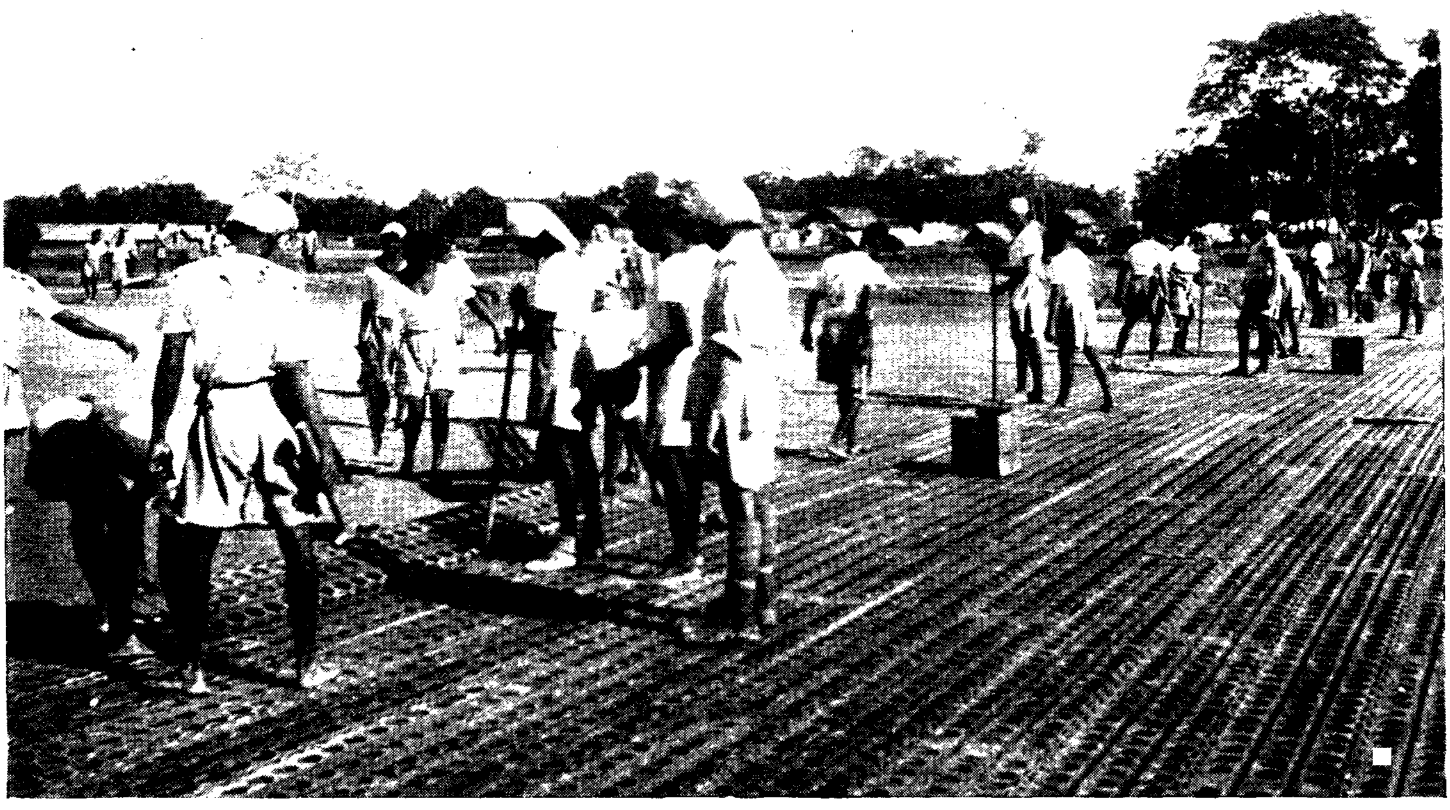
China — Difficulties of supply limit the employment of engineer troops in China. But the Chinese themselves are capable airdrome builders. Runways of stone, two feet thick, are constructed by many thousands of Chinese laborers, men and women. The rock is quarried by hand, crushed by hand and carried in baskets to the site of the runway or taxiway. It is then laid by hand in graded layers, and rolled by huge stone rollers pulled by about 150 coolies; this rock bed then is bound by pouring in a paste of mud. This imperfect surfacing is the one flaw in an otherwise high-grade runway. Asphalt is not available locally. Drainage problems are solved by the Chinese, who understand the problem and construct the systems by hand.

These Chinese laborers are cheerful in their work, and their great numbers help to make up for lack of equipment.

New Guinea — Here the engineers—all engineers—started from scratch, and had to build docks and access roads as well as a network of dispersed airdromes. The results are impressive. Landing fields around Port Moresby have been bombed many times. Revetments are provided for hard-standings, and have reduced the losses from high altitude bombing.

A number of fields—most of them having runways suitable only for very light planes—have been built with native labor. For a wage of about two shillings

American engineer troops have speeded up the construction of fields in India by introducing steel landing mats. The mats pictured below were installed in August, 1943, and were the first to be used in India.



a month and food, these natives actually tramp out runways with their feet.

The 871st Airborne Engineer Aviation Battalion was our first complete airborne battalion overseas. Starting July 10, it was flown to Tsili-Tsili by companies with a complement of 19 bulldozers and an extra complement of 32 jeeps. They also had twenty-eight .50 caliber machine guns, because they were only forty miles from the Japs and had to defend the field while building it. Within three weeks they had built two runways, one 6,000 feet long and the other 4,500 feet, with seventy hard-standings. It soon became a well-stocked forward field. Twelve Jap bombers attempted to raid it and all twelve were shot down. This site was accessible *only by air*. (*Photo on Page 49.*)

After this field had been used successfully in the operations against Wewak and Lae, this unit and another airborne battalion were flown to locations behind enemy lines where they have rapidly built new landing fields north of Lae.

Hawaii — The layout in Hawaii is magnificent. Its installations are secure. Especially interesting is the large amount of underground construction—tunnels for storage, headquarters offices and even a complete repair shop for planes. There are airdromes of all sorts. Around Oahu alone, I counted more than a score of fields.

A few general observations should be added. Specifications for airdromes overseas vary widely. At one extreme is the hasty construction job at the front, and at the other is the elaborate airfield at permanent bases. There is a definite trend, however, to standardize on all-purpose fields with runways, 6,000 feet long and 100 to 150 feet wide.

In removing mines and booby traps from captured fields, the aviation engineers are discharging an important combat function. I visited one field in Africa where 1,700 mines had been taken from one runway. Engineers also have defended landing fields from air and ground attack.

Hawaii is a model of camouflage technique. In most of the other theatres thorough concealment has not been attempted. Camouflage takes much time, effort and material, and a realistic approach dictates that its use be in keeping with its relative value. Always there are vital installations that need concealment. And individuals need an appreciation of concealment and of camouflage discipline. In a large sense, camouflage is a means of deception which can be used as effectively in offense as in defense. Aviation engineers are skilled in making dummy planes and installations which may deceive the enemy as to our strength and intentions.

In general, the need for rapid construction of advanced airdromes overseas is being recognized and met. And thus the engineers are setting the stage for an aerial offensive that strikes deeper and deeper into enemy-held territory. ☆

Paid about two shillings a month for their work, New Guinea natives (above) use this litter device for carrying earth from excavations made during the construction of an airfield. Indian women (below) use a different carrying device, preferring to tote concrete for the runways in wicker trays which they balance on top of their heads.

Answers to Quiz on Page 40

1. (c) A-20
2. (d) Fifteen days before the date set for an attack
3. (c) In the Solomon Islands
4. (a) Master Sergeant
5. (b) Lufberry
6. (a) *Maj. Gen. Claire L. Chennault*
7. (a) Three
8. (d) A form of ice which adheres to exposed surfaces
9. (b) Denver, Col.
10. (a) A light plane often used for liaison and reconnaissance work
11. (c) Dizziness
12. Freedom from fear
13. (b) Invader
14. (d) Needle and ball and airspeed
15. (c) Canberra
16. (b) A body of water between Norway and Denmark
17. (a) Any monotonous or routine flying assignment
18. (b) Measure cloud movement

EMERGENCY CARE OF AIR CREW CASUALTIES

IMMEDIATE first aid given to men injured in air battle has saved many lives, and will save many more if combat crew members know what to do when one of their fellows is wounded or hurt.

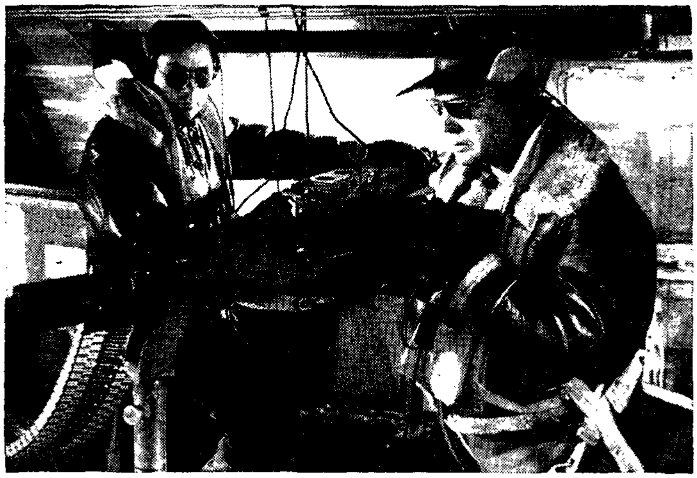
This is the theme of a new training film (TF 1-3335), "Emergency Care of Air Crew Casualties," produced by the AAF First Motion Picture Unit in Culver City, Calif. The story gives instruction on the first aid treatment of various types of injuries and then shows how such instruction is put to use when men are hurt and wounded during a fight in the air. It shows why it is essential that each man know what to do in case of fracture, hemorrhage or shock, and that he be familiar with and know how to use Kit, First Aid, Aeronautics.

1. The scene opens with Capt. Bill Keever, flight surgeon, demonstrating Kit, First Aid, Aeronautics, and the package of additional medical supplies. It is imperative that each member of the crew know what each item is and how to use it.

2. Captain Keever is ready to demonstrate on Private Gates who nervously watches the approach of the morphine syrette. "Never use morphine on a guy who's unconscious or suffering from a head injury," the doctor warns. Gates looks almost unconscious.

3. Gates is made up to look as though he had been the victim of a flash burn. His eyes are not burned because it was assumed he was wearing goggles, as all crew members should on a mission. "Apply the ointment liberally but gently," the doctor says.

4. Captain Keever demonstrates on Gates the use of materials in treatment of cuts, wounds, burns, fractures, and shock. Gates looks as though he'd been dropped out of a plane and then jumped on. The doctor is giving instructions that all should learn.



5. The scene changes to the "examination,"—what would you do when the heat's on, you're on a low level mission and flak and Zeros are moving in, and although your plane is still going, it's taking some hits? Above, a gunner sights on some Zeros.

6. Lawson, the ball turret gunner, is hit in the arm. A tourniquet is placed, and on Lawson's forehead the time is marked. The tourniquet must be loosened each fifteen minutes. An oxygen bottle with re-charger tube is ready for the wounded man.

7. The fight's over, but things aren't going so well. Odell, the other waist gunner, got it in the leg, shrapnel—open wound and fracture. You cut his flying suit away from the leg, sprinkle a lot of sulfa on the wound, and apply a compress.

8. You don't let Odell move; you put splints on his broken leg; with seat cushions and flying gear you make him as comfortable as possible. Odell is in pain and he is given some morphine with a syrette as was taught *earlier in the movie.*

9. Thomas, the tail gunner, is hit. He's out cold and suffering from shock. You put an oxygen mask on him, bandage him, cut his suit open, lay him down with his feet higher than his head, cover him with a blanket and keep him warm.

AAF FIRST MOTION PICTURE UNIT

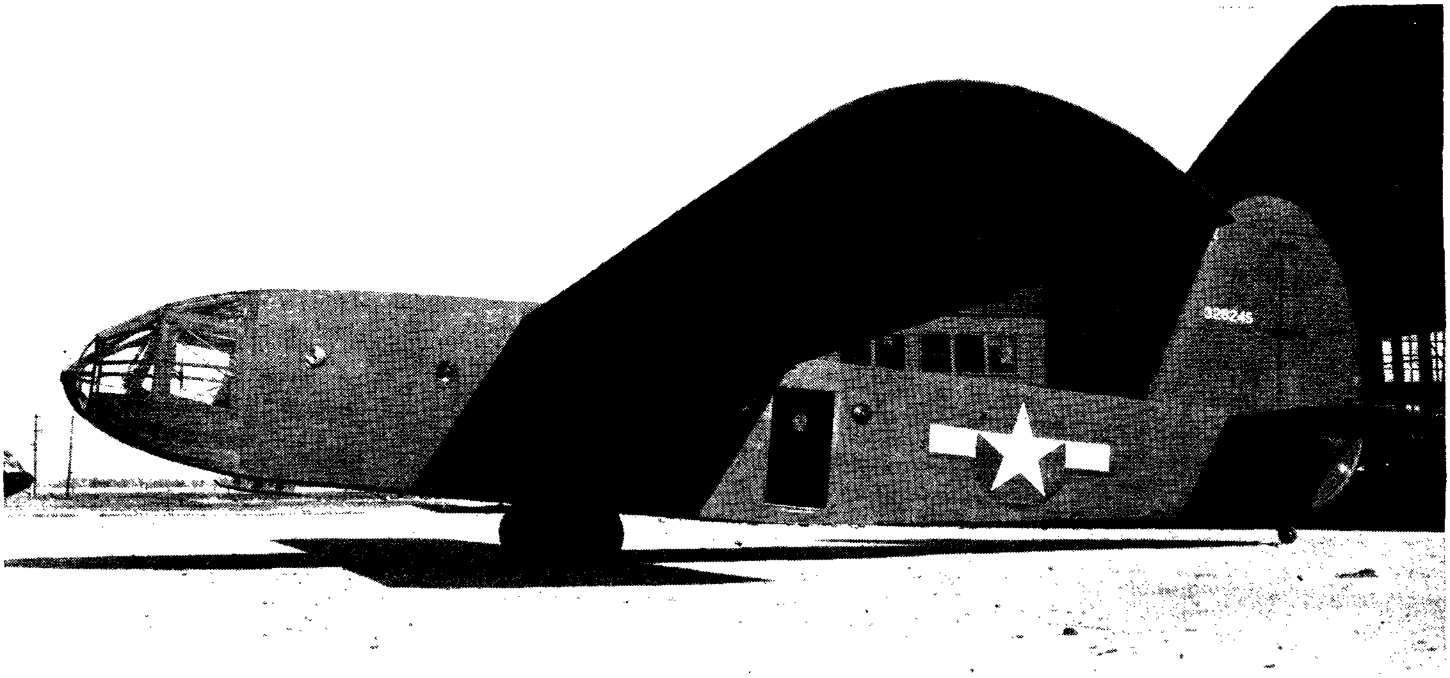
Culver City, California

WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.

TECHNIQUE

A Review of Technical Developments in the Army Air Forces



Glider Giants

By Lieut. Col. Bruce B. Price

CHIEF, GLIDER BRANCH
AIRCRAFT LABORATORY
WRIGHT FIELD

It is now permissible to reveal that the Army Air Forces has the largest in-production glider in the world. Designated as the YCG-13, the ship is a high-winged motorless craft primarily built as an aerial freighter.

Even as this is written, one of the production models is somewhere in the skies over North Carolina on maneuvers with the Troop Carrier and Airborne Commands. Before long, others like it will be slipping out of night skies onto Yank-captured airfields with bulky, intact equipment that cannot be carried by any of our present transport planes.

The big glider can carry more than two dozen infantrymen with packs, rifles, mortars, and small machine guns in its roomy interior. It can lift into the air several tons of equipment and supplies, nearly as much as some of our heaviest bombers with their four powerful engines. That is why we call it "a damned good pack horse."

The YCG-13 has not been long in the air. Glider experts of the Aircraft Laboratory at Wright Field have been gathering test data on its predecessor, the XCG-13 (first of the big gliders) since March 10, 1942 when the Waco Aircraft Company of Troy, Ohio delivered the first model to the Army. However, they "flitted" out some bugs on a small delicately scaled model in wind tunnels. Too, a full-sized glider took treacherous punishment in structure tests and proved to be 100 per cent structurally safe.

Hundreds of flight tests, load trials and other practical applications have been tried and checked at the new Clinton County Army Air Field for gliders near Wilmington, Ohio. There, for many months, the experimental version of the YCG-13 was given a rigid flight test routine. Not until Wilmington gave the go-ahead signal did production begin on the new models.

December 2, 1943, the author made the first flight in the YCG-13 being towed into the air behind a Douglas B-23 bomber from Wold Chamberlain Field in Minneapolis, where the production models are being built from Waco plans by the Northwestern Aeronautical Corporation. It was a very successful flight.

Capt. Ben West, project engineer on the ship, was my co-pilot. Lieut. C. N. Eastlake and Flight Officer John S. Bryant flew the tow plane. The glider took the air after a very short run and we climbed to 5,000 feet where the tow-rope was cut loose. Then we did some stalls, steep banks and executed a few chandelles, landing smack in front of the administration building at the field.

From the test flight it was concluded that YCG-13 had two outstanding characteristics: (1) Although it has approximately the same wing area as the smaller CG-4A in-service gliders, the big ship has double the CG-4's wing loading and hence it is more stable in tow. (2) The controls functioned better than on any glider we had previously flown.

On the second flight of the craft Captain West and Lieut. William F. Sauers took aloft Northwestern's president and nine of the company's engineers who built the aircraft. Then, because there was urgent request for the glider to be used for maneuvers now in progress, we decided to fly the ship to North Carolina via Chicago-Dayton-Wilmington. Its third flight was non-stop 500 miles from Minneapolis to Chicago where darkness enveloped the ship. West and Sauers were in complete charge as its crew and they decided to continue on to Dayton. They flew all the way behind the Douglas tow plane without radio communication and without lights since the electrical system was not functioning in the tow plane. It was pre-arranged with the pilot of the B-23 to cut the glider loose at a certain altitude over Wright Field. When it finally came in over Dayton, it was pitch dark. The tow-rope was cut loose and they landed in the center of the field.

The YCG-13 weighs approximately 8,000 pounds empty. The fuselage is built of steel tubing. This affords good protection for crew and cargo in the event of crash landings. Operations in Sicily proved the glider construction could take it for there the CG-4s which have the same construction caused very few injuries from breaking up in emergency landings. The wings are of all-wood construction. Both fuselage and wings are covered with tough fabric that is stretched drum-tight over the structural frame. When the glider is in tow the wind whistles past the fabric and it is rather noisy inside.

It has two doors to aid in landing infantry troops, in case it should ever be called upon to move troops en masse.

This glider can land on either wheels or skids. It must have its wheels to get into the air, but once in flight this 300-pound additional weight can be dropped to cut down considerably on the drag and increase the speed in tow. This is done only when the glider is going to be landed on rough terrain. In this case, or for small fields, skids are more effective because they bring the ship to a quicker stop.

The big glider cost about one-tenth of the price of a transport plane which allows for cheaper operations. This is especially true in cases where military operations necessitate leaving the glider after a crash landing. There is another point too: Towing gliders behind C-47s is not an efficient operation. That is, you are not getting anything "free." The loss in climb, speed and extra gasoline used in the mother ship eats up all the gains. However, the glider does allow for more freight carrying space. For instance with a P-38 towing a glider (CG-4A), the fighter becomes fifteen-place transport plane. Therein lies the chief reason for using gliders.

The YCG-13 with its great lift capacity will make possible movement of heavier, bulkier equipment by air than ever before. Someday we hope to be able to move an entire battery.

The Flying '75'

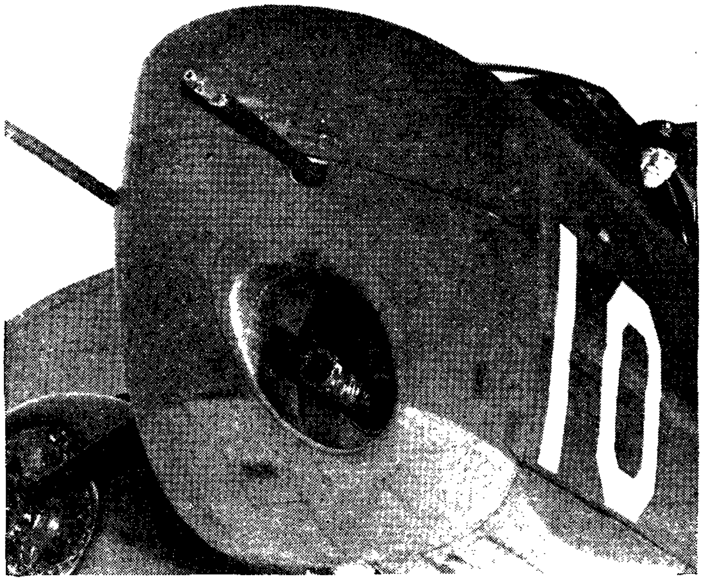
On the ramp of the big armament range at Wright Field stood an old Douglas B-18 bomber, rather frumpy looking with a bathtub structure slung under her belly. Inside the tub was mounted a Model 1898 field piece—a 75 mm cannon. It was the first time a gun of this size had ever been tested on an American airplane. The time was September, 1939.

Everything possible had been done to strengthen the ship's structure, yet some of the men making the test felt sure that when the gun was fired the plane would tear apart. The cannon was loaded, then fired. The old B-18 shook, trembled, jerked back a couple of feet in her cradle, but remained intact.

Many rounds were fired on the ground and over Lake Erie, and while the ship and cannon combination wasn't perfect, it did prove that the armorers and plane makers were on the right track. Numerous tests followed until 1942 when North American, in cooperation with Army Ordnance experts, successfully installed a 75 mm tank gun in a B-25, employing a new hydro-spring recoil mechanism. After further tests the first of these planes were ferried to the Southwest Pacific to the Fifth Air Force. During first combat in September the gun proved an immediate success. At the same time the new weapon took the Germans and Italians by surprise in the Mediterranean where it was used chiefly against surface craft, ground emplacements and power houses. It is known that at least one Jap destroyer was sunk. An advantage of the gun against ships is that it can be fired over a long range with effectiveness.

The cannon adds a ton of weight to the plane, uses a shell weighing twenty pounds and has been known to hurl its fifteen-pound projectile several miles.

The 75 mm cannon on the B-25 is an M-4 gun mounted in the forward section of the fuselage to the left and below the pilot's position, the installation having made it necessary to make changes in the pilot and navigator compartments. The cannon-carrying Mitchells can still be used for dive, skip and pilot bombing, but lose their effectiveness as precision bombers. The nose of the B-25 was shortened and heavier armor was added to the front of the plane.



This shows the position of 75 mm cannon in nose of B-25.

Loading the 75 mm shells.

The gun is hand-loaded and is aimed and fired by the pilot. A magazine for shells is located above the breech of the cannon and within reach of the loader. The gun is fired by a sensitive button on the control column, the same device used to fire the twin .50 caliber guns which are mounted above the cannon.

Heaviest plane cannon previously used was the 40 mm piece employed by British Hurricanes and Russian Stormoviks with great success against tanks and similar targets. The heaviest previously carried on U. S. planes was the famous 37 mm introduced by Bell a few years ago. How much heavier the airborne cannon will become depends upon the future development and design of planes. *(Technique Continued)*

Flying Kitchens

They used to say that an army moves on its stomach. Today's army, however, flies on its stomach.

Recognizing the need for keeping American airmen well fed while their planes sally back and forth on long missions over land and water, the Equipment Laboratory at the AAF Materiel Command, Wright Field, has developed a number of galley kits and food warmers. Experiments are being conducted with still others to provide flyers with warm food while they ride the skies.

Two galley kits which have already been tested by tactical squadrons and which enable as many as ten men to be served in an hour's time are the C-1 and C-2 units.

The C-1 Kit has been designed for cooking food while planes are in actual flight. Heat is furnished by electrical elements operating from the aircraft's electrical system.

The C-2 Kit can be used both for cooking food in flight and for carrying pre-cooked meals. Food pots, part of the unit, keep the food at eating temperature and storage space is provided in one end of the kit in case it is necessary to cook while in flight. A grill, which may be used for cooking or frying, makes the kit a modern flying kitchen. Also included are one hot cup, a sugar container, and salt and pepper shakers.

This food warmer holds four individual casseroles, each containing a complete meal, and four canteens.

Supplementing the galley kits, equipment engineers have also prepared a "flight lunch" which may be prepared by either of the galley kits just described. It was designed to give crewmen hot food that is tasty and balanced. The complete lunch consists of beef bouillon, dehydrated meat (chopped beef), precooked rice, "C" biscuits, tomato paste, chili powder, preserved butter, coffee and hard candy. Beverages include tea, lemon powder and powdered milk. Gum, fruit bars and dried fruit are also part of the menu. A minimum of one canteen of water per man is required to prepare the meal for consumption.

The flight lunch weighs six and a half pounds, and can be prepared by any crew member simply by following the accompanying directions. The rice and meat are precooked, and the beverages require only water.

Army officials recommend that another unit known as the "Quartermaster Outfit, Cooking, Small Capacity" be taken along in case of forced landings. The quartermaster unit includes a gasoline stove for cooking food on the ground.

For shorter flights where hot food isn't necessary, a Type A-1 food container has been developed for carrying snack lunches. In this unit are four thermos bottles and a food basket. Cold foods such as sandwiches are carried in the basket, and hot liquids are stored in the thermos bottles. Facilities are provided for four men.

Another type of galley kit now undergoing experimental tests but not yet released is the AG-1 kit. This unit will provide complete cooking facilities for large crews either on the ground or in flight and will supply hot storage for enough food to give a twelve-man crew two full meals. Outstanding characteristics of this kit are two cooking elements located in recessed bowls and insulated storage drawers. The latter contain four one-quart utensils and will keep food at eating temperature while in flight. Cutlery and utensils for twelve men will make the eating problem as easy as going on a picnic.

Two additional food warming units now undergoing experimentation are the Type B-2 and Type FTG-1 units.

The B-2 unit consists of a heavily insulated chest with four one-quart-capacity food pots. This unit can feed a crew of twelve men, and amperage drawn from the aircraft electrical system is low even with all four food pots in operation.

The FTG-1 food warmer—one of the most ideal designs—contains individual metal casseroles, each holding a complete meal. These, of course, eliminate dishes. Each casserole has a capacity of two pounds of meat or 3½ pounds of vegetables. Four one-quart canteens for coffee are included.

Until now, cooking or eating at altitudes above 10,000 feet has been found impractical because of the bulky equipment flyers must wear at such heights. Since planes are now flying at higher and higher altitudes, however, equipment experts are eyeing the future. Meals will be cooked on the ground before flight, kept at eating temperature during flight and consumed when the plane is flying sufficiently low to allow removal of oxygen equipment. That's why you'll hear more about food warming units such as those just described. **— Lieut. A. D. Stout, Jr.**

One Man Show

Alex Smith is a former auto mechanic with a mind as nimble as a startled gazelle. His job at Warner Robins Army Air Depot in Georgia is to make tools that will save time, money and materiel. When Smith works on a project the ideas leap out like popcorn in a hot skillet. When he has finished he has a new tool that will do the work better and quicker than it was ever done before.

Smith worked in engine installation until he began pulling so many time and materiel-saving gadgets out of his hat he was given the "Award of Merit" by Maj. Gen. Walter H. Frank, commanding general of the Air Service Command. After this recognition, he was assigned to a new one-man department for tool development. On his own, Smith rolled up his sleeves and developed a gadget that removes the most stubborn screw from aircraft wings without damage to the screw or plane. With this gadget one man now does the work which previously required a gang.

Another invention, an engine hoist sling, is considered so valuable that a model was flown overseas to be copied and used at advanced airbases. With this sling and a hoist, one man can remove an engine from its crate and have it in position for mounting in an aircraft in a few minutes, an operation that previously called for three hoists and a crew of four men working an hour or more. The device also speeds up and simplifies the work of pulling an engine for repair.

Smith is now working on a gadget light and small enough to be carried as standard equipment on a medium bomber, yet strong enough to pull an engine for on-the-spot repairs. The advantage of such a device is obvious in the event of forced landings due to engine failure. If such a landing were made in enemy territory the device could mean the difference between life and death for the crew and result in saving a half million dollars worth of aircraft.

Among the Smith creations is a device which makes child's play of what formerly was a four-man job, an implement for mounting or dismounting a 300-pound landing gear wheel. Naturally, he has invented dozens of trick wrenches that reach around corners and into hidden places and there seems to be an unlimited supply of time-saving gadgets yet to come. Many of Smith's creations are patented and the patents turned over to the United States. Smith says he's having fun. That's enough for him. **— Hq. Warner Robins ASC, Ga.** ☆

★ Gallery of Fighters ★

Maj. Jack Oberhansly, Utah

Maj. Jack C. Price, Colorado

Col. Arman Peterson, Arizona

Capt. John D. Irvin, Calif.

Lt. Col. E. P. Roberts, Wash.

Lt. Col. J. J. Stone, Jr., N. J.

By Maj. Charles D. Frazer

AIR FORCE STAFF CORRESPONDENT

BACK of the bar hang many vivid drawings—the personal plane insignia of the P-47 pilots.

There are such names as Spokane Chief, El Jeepo, Iron Ass and Feather Merchant.

On the other three walls are several photographs. One is striking. A tall, snub-nosed pilot is standing close to the leading edge of his Thunderbolt's wing. Both he and the fifties protruding from that wing look businesslike. And men who have flown with him will tell you that Charlie London is very businesslike.

This bar, with its battery of sixpence and shilling slot machines, is in the officers' mess of an 8th Air Force fighter group.

Except for a group made up of former RAF flyers, this is the oldest U. S. fighter outfit in the United Kingdom and the base from which it operates—a permanent station borrowed from the British—is very comfortable. A squash court is among the comforts.

Capt. Charles London, who is now back in the States on assignment, was the first American P-47 ace in the European theatre. He used to be a life guard and he looks it. Six feet one, 180 pounds. A big man for a fighter pilot, but his squadron mates say he's just about the perfect flyer.

London's fighting technique basically is this: he rides in on the German, gets so close he can't miss, then presses the black button that unlimbers the eight fifties in his wings. His combat films always show pieces of German plane flying all over the sky.

It's not quite that simple, naturally. London believes that in combat position is everything. He always manages to position himself and the other planes of his four-ship flight so they all get a good chance for a bounce.

"I don't believe any of the Germans I've shot down ever saw me coming," he has remarked.

London has flown more than seventy missions across the Channel. He is credited with five destroyed—two FW-190s and three ME-109s—one FW probably destroyed, and two other planes damaged.

Rarely has he got into much trouble himself, but London admits he's been tricked. He tells about the day the group was on a sweep—trying to lure some Germans up into a fight. An FW was seen far below—seemingly lazy and all alone. London took his flight down.

"I still don't know where they came from," he says, "but suddenly there were twelve or fifteen Jerries around us.

"The thing that saved us was our system of sending down one flight after the other—for assurance. Cooper, my roommate, could hear us yelling that there were a lot of them and he got his flight down fast. The Germans scattered like a school of minnows when you toss a rock into the water."

Two FWs had got on London's tail, however, and they gave him a merry time of it while he dove away, beating on the throttle, and executing the military maneuver known as getting the hell out of there. "That was the day I discovered there's no such thing as a fearless man," says London.

This rangy, hard-eyed flyer—like his roommate, Capt. James Cooper, a veteran of some eighty missions, and every other pilot of the group—has no illusions about fighting the German.

They do not respect Nazi pilots, particularly. They know that a German doesn't like an even battle. Nazis want everything in their favor—to outnumber you, to be above you and, if possible, to have the sun in your eyes.

Nevertheless, the enemy has good planes, good anti-aircraft, many good flyers. And, as Maj. Gen. William E. Kepner, 8th Air Force Fighter Command chief, points out, the men of the Luftwaffe will attack vigorously when they think it will pay big dividends. To meet opposition of this kind, you have to be just a little better.

Pilots of this veteran P-47 Fighter Group specialize in bringing their 'big friends' home from missions over Europe.

London, for example, takes an extreme interest in his guns. He was once a squadron armament officer and knows his stuff. He is careful, too, about the things that add to the speed of his ship.

"That's what has the Germans worried—our speed and our firepower," observes Lieut. Col. James J. Stone, Jr., commanding officer.

"Diving away is the ace in the hole for a fighter pilot. Once the Focke-Wulf could break combat and get away in a high-speed dive. But the P-47 can outdive the FW and since, like all American planes, it is extremely well-built, will hold together while catching him in the dive.

"What's more, a one-second burst from those eight fifties will down any fighter made. Our 47s have been in combat since April, 1943. Since that time we've made a believer out of many a German pilot. We worry them and that alone is a big part of our job."

Stone is thirty years old, a slender blond man with a wind-reddened face, who has been flying about four years. Before the war he was a research technician. Genial, pleasant, well-liked, the Colonel nevertheless can look at you in a dispassionate way. His record: two destroyed, one probable.

Stone constantly drives home to his men that their primary mission is to take the bombers there and back. "Get a Jerry if you can but don't go too far from the bombers to do it."

He and other flyers of his group have a strong feeling for the bombardment crews.

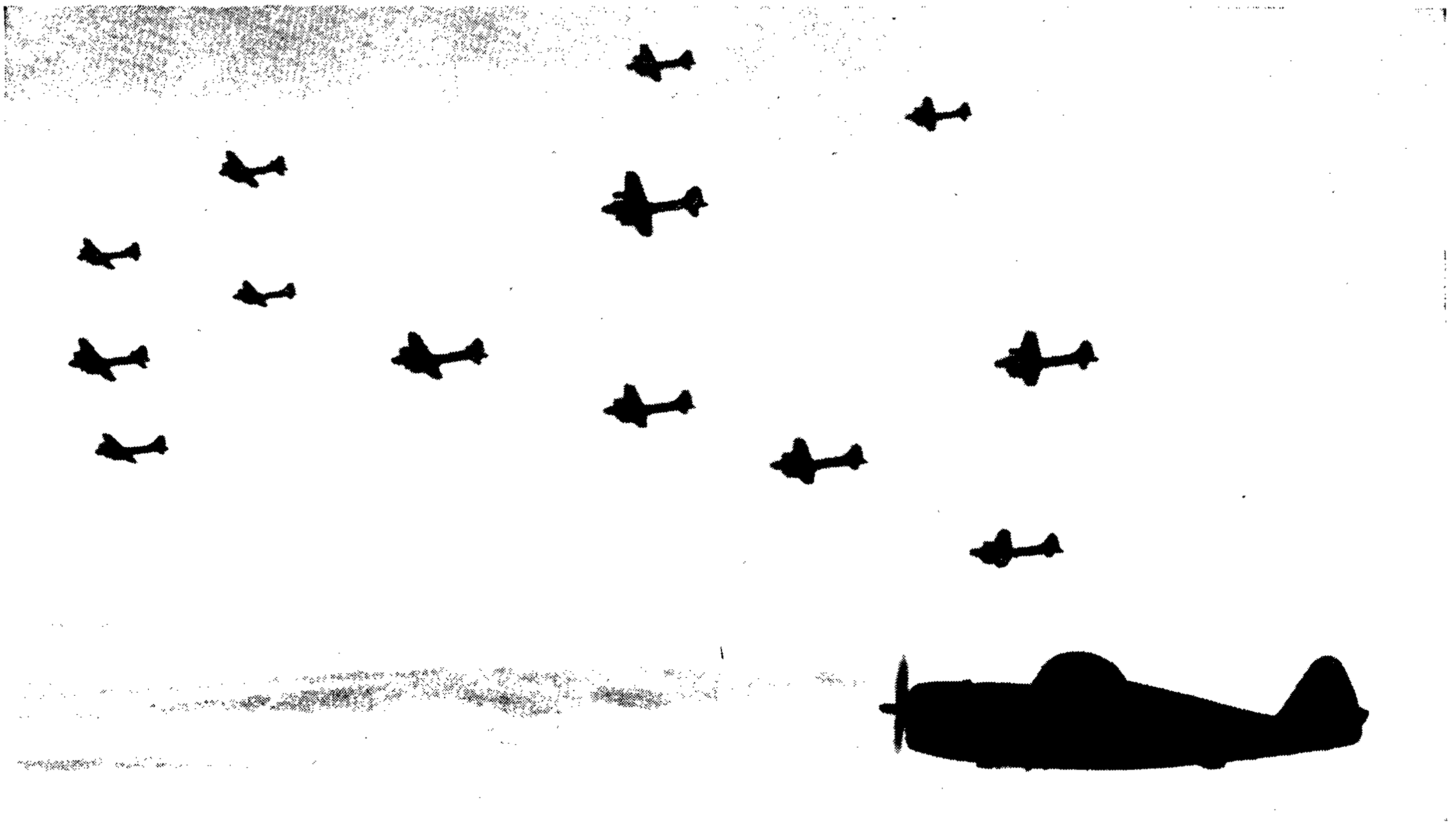
One shakes his head sympathetically, saying: "The boys in those Forts sure have it rough." Another comments, "At first, I thought of it rather as a game of chasing planes. But on one of our early escort missions I saw a Fort catch fire and start spinning down, with all those bastards ganging up on it. From then on, you're after Germans—not just a plane up there with black crosses."

So that's how it is. Flying in close, well-trained formations themselves, these fighter pilots "S" back and forth above the heavy bombers—into the target, over the target, home from the target.

Never do they stray too far right or left, never do they attack German fighters just for the sake of attacking. They know the Nazi trick of lying off to one side of a formation, hoping to suck the fighters out while some of their companions go in to hit the bombers.

Lieut. Col. Eugene Roberts' picture has

Like a shepherd dog protecting its flock, a Thunderbolt fighter escorts the big bombers in strikes over enemy territory. Other P-47s umbrella the Fortresses from above, and still others form a screen to ward off attack from below.



Capt. Charles P. London, Calif.

a prominent place on the wall of that bar, for he is one of the highest scorers of AAF fighter pilots in the European theatre. Nine destroyed. And a lot more well scarred. One day last summer he destroyed three in one scramble.

He is air executive officer of the group. When it goes out in two divisions, he usually leads one while Colonel Stone leads the other.

Roberts never talks about his score but he does talk about his airplane, insisting it's the best in the group.

The history of his Spokane Chief is impressive. In nearly 200 hours flying time the plane has never had to return for any mechanical reason whatever.

Colonel Roberts credits this record to his crew chief, Tech. Sgt. Negley Sapper. Sapper, he says, works like a mule skinner, waxing, polishing, overhauling the ship every 25 hours, keeping it in perfect shape. Assisting the crew chief are Sgt. James Darrell and the armament sergeant, Russell Brooks.

These men, on the other hand, say that Roberts has had a lot to do with the maintenance record. "He takes awfully good care of her and always observes the taxi and warm-up rules."

Then they emphasize that the Spokane Chief has never been even scratched in combat, by either flak or bullets. They speak possessively about it as "their" ship, for pilots and crewmen are a team and on the side of every P-47—right under the name of the man who flies it—are the names of the men who keep it up there.

At this base there are pilots with seventy, eighty, ninety or more missions in their log-books.

There is, for instance, Maj. Jesse Davis, a squadron commander, who has destroyed two Germans. Maj. Jake Oberhansly, another squadron commander, with two; Capt. Jack Irvin, with four; Lieut. Pete Pompetti, who used to be an enlisted man, with four; Maj. Jack Price, a squadron commander, who has three; Lieut. Col. Harry Dayhuff, now assigned to Headquarters, Fighter Command, with two; and so on and on.

The group has its rough times. Originally, back in the States, it was a P-38 outfit and it arrived in England in December, 1942. Just as it was about ready to go into action, there was an urgent call for planes and pilots in Africa.

So the group lost its ships and all its flyers below flight leader. The remaining handful of men reformed the group, trained in brand-new P-47s and eventually, in April, 1943, became operational.

In mid-summer, within a single month of bitter fighting, the group was to lose two commanding officers. The second was Lieut. Col. Melvin McNickle, now a prisoner of war.

The first had been Col. Arman Peterson.

Capt. James M. Cooper, Calif.

Stone and Roberts and the rest like to talk about Pete. They tell countless stories about the difficulties they had getting organized. Colonel Peterson was a CO who went all out for his men. When he walked into the briefing room, or into a hangar, or down the flying line, he was the Colonel and everybody knew it and smartened up. But when he was off-duty he was just Pete, friendly, casual, a good companion.

Sometimes he was called Eager Pete, for that's the way he flew. He always wanted to be in the heat of the action and was always guiding and coaching his flyers.

ONE day, as his 47s reached the enemy coast across the lower North Sea, Colonel Peterson sighted a flock of Focke-Wulfs and the radio rang with his eager voice.

"I am making a 90-degree turn and going down." A pause, then: "They're Huns, lads! Give them hell! Here we go! Tallyho!"

Peterson's plane roared through the FW formation, scattered the Germans, then zoomed up again. The sky became wild with planes. Colonel Peterson regained altitude and was seen to dive again. He could still be heard saying clearly, "OK, lads. Stay in pairs now."

But what happened after that nobody knows. Pete has been missing in action since that minute.

As the pilots straggled back to the field they couldn't believe Pete was missing. They took their ships off again, looking, hunting, searching, until there were only cupfuls of gas left in their tanks.

Nowadays, when a mission is on, it is quite a sight to see these fighters take off. The field has no runways, just a broad and level stretch of green sod. Flights of four of the barrel-chested Thunderbolts roar across the field in echelon, rise and fly full circle until they're in perfect formation. Eighty ships may take off in less than five minutes. Then they streak away to the east to keep a date with their "big friends." ☆

Maj. Jesse C. Davis, Wis.

SKIP BOMBING WITH LOGS

By Lieut. Reginald Hayes
13th Air Force

Wooden projectiles fall on a steel drum "ship" when this South Pacific squadron practices.

When a bombardment squadron showed up at New Caledonia after a stretch of combat at Guadalcanal, the CO, Col. Harry E. Wilson, found he had problems on his hands.

Six combat crews were scheduled to return to the States and their replacements had to be trained in highly developed techniques of warfare in the Pacific. There was a shortage of practice bombs, and the only target available for skip bombing was an old hulk ninety miles away. It was impossible when practice-bombing the shipwreck for flight leaders to tell how they were doing.

The problems of what to bomb and what to bomb with were solved by a little ingenuity on the part of the officers and men of the squadron. Master Sgt. Carl E. Siebert, of the armament section, cut some rough Gaiac tree logs which were approximately the same size and weight as the 100-pound bombs. He drove in two six-inch spikes for hangers, and later added rough wooden fins when it was found the logs tumbled without them.

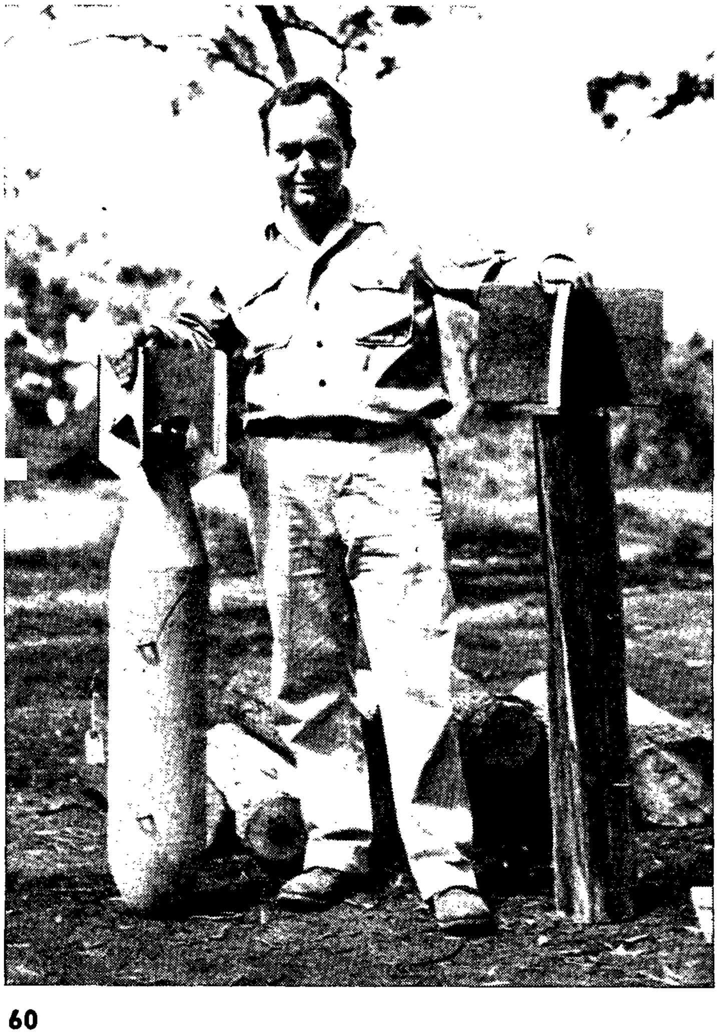
A number of comparison tests were made and it was found that in masthead bombing the logs followed about the same trajectory and angles as the actual bombs. The improvisation conserves the use of expensive ordnance material, saves shipping space and, too, the supply of Gaiac logs is plentiful. One problem solved.

Lieutenant Hinkel hit on the idea for the target. He put fifty salvage steel drums about 250 yards off shore, filled them with water, and arranged them in a pattern to look like the outline of a 250-foot long ship. The drums were placed in tiers at bow, stern and center, with flags hung on wire the entire length to give height and indicate superstructure.

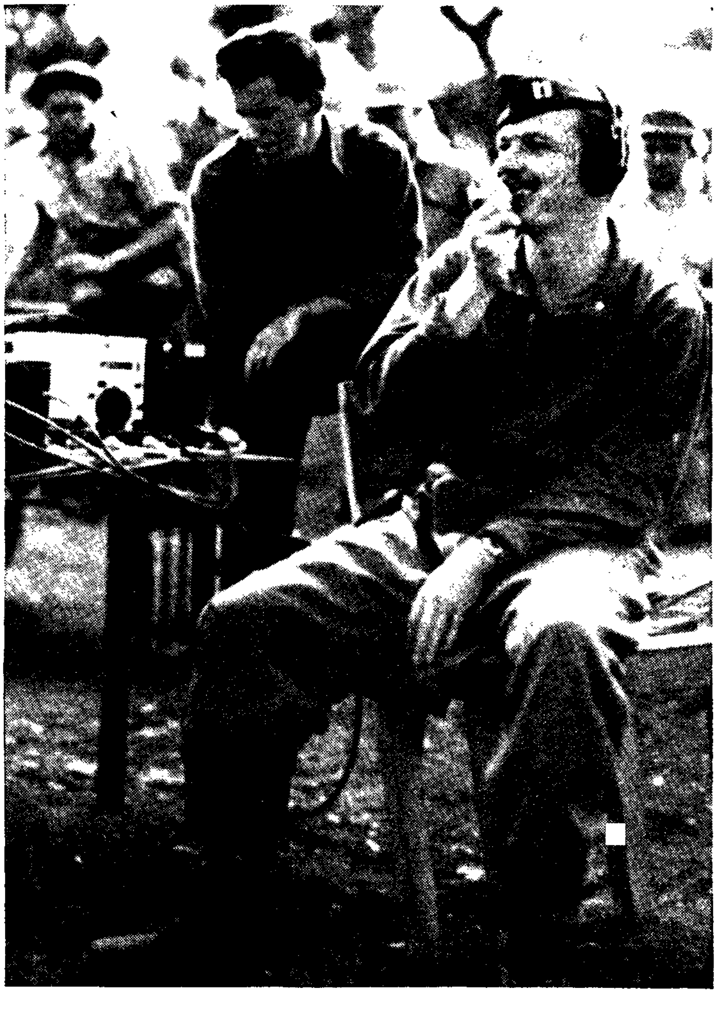
An observation post for a controlling officer was placed on shore, where he can observe the bombing runs and give his comments to the planes through direct radio communication. Things work out beautifully; the crews get their bombing training and instructions from an experienced officer who can see every move their planes make. Officers of this squadron believe training time has been cut fifty percent.

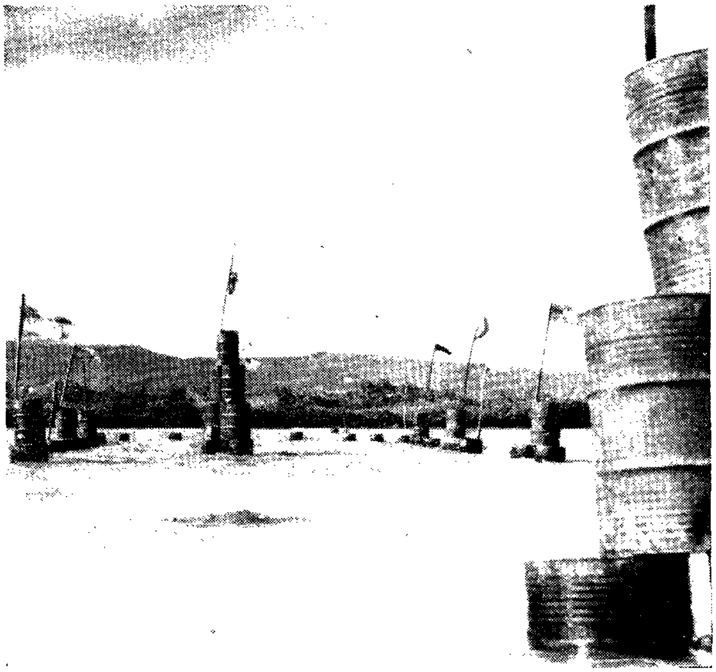
The only men who have any complaint are armament section men who wade out at low tide to make repairs on the "ship," and who paddle around in rafts recovering floating logs which did not disintegrate on impact. They also cut the logs. ☆

Member of a bombardment squadron looks over a 100-pound bomb and the wooden one his squadron uses in practice.



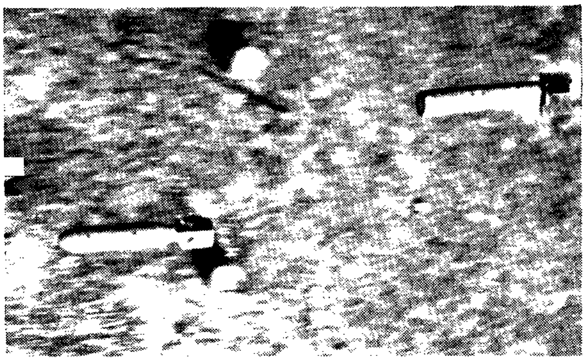
The control officer takes things comfortably while he gives radio instructions to crews making bombing runs off shore.





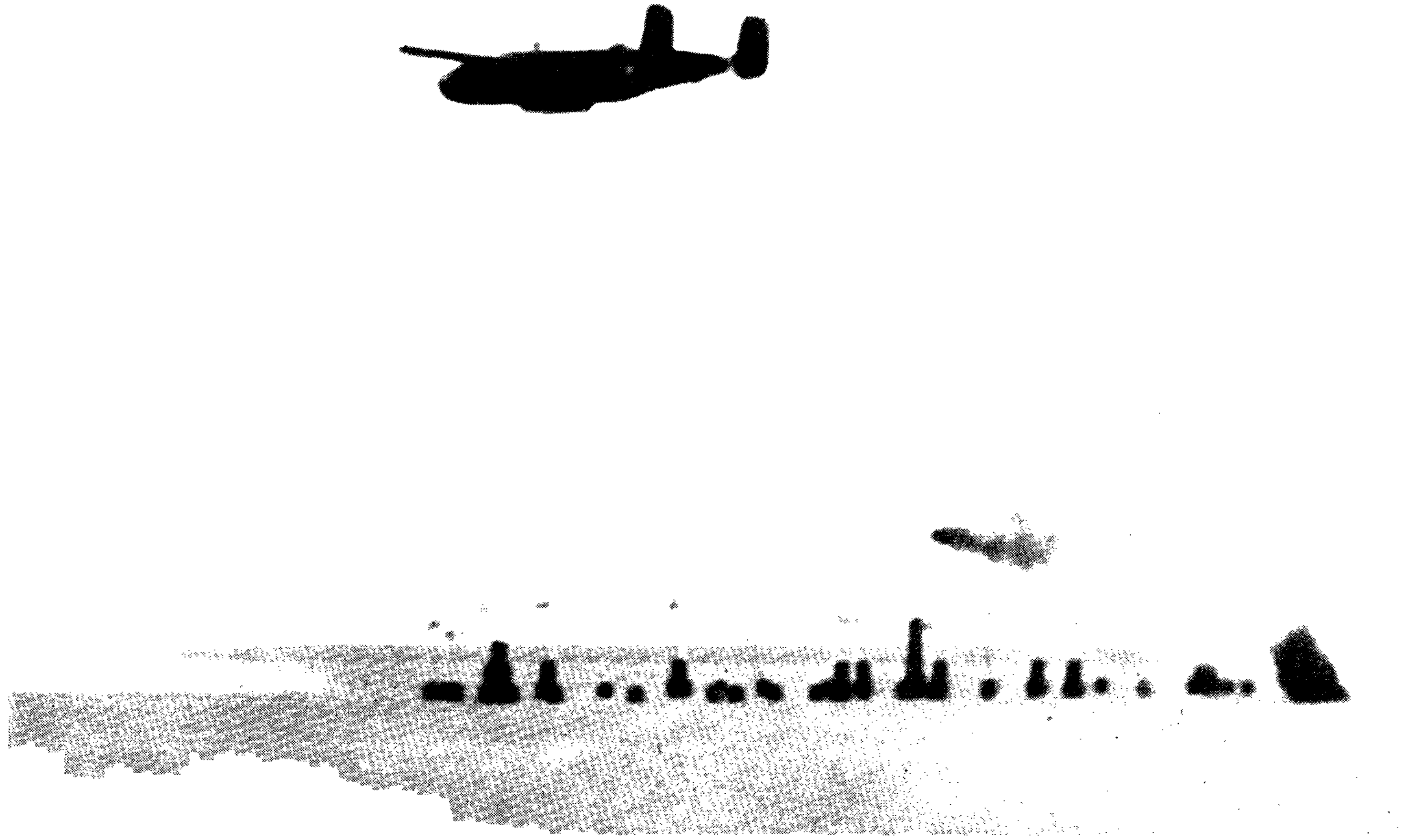
The target is a bunch of salvaged oil drums laid out in the outline of a ship. The flags indicate height and the superstructure.

A B-25 makes a run on the target. The control officer on shore can see how the pilot is doing, and give him suggestions.



↞ An actual 100-pound practice bomb and a log counterpart. The logs take about the same trajectory as a bomb, and are used frequently.

↓ The "bombs" hit at about the right spot for proper skip bombing.



CROSS COUNTRY

(Continued from Page 5)

of The Pacific Tramp. The mystery of the hurled overalls has come to contain magic words which help to bring them back. It worked once when they came back on two engines, but that was just a preliminary round with trouble. Another time the entire cargo of live bombs fell into the closed bomb bay and the men broke into their battle song as they passed the bombs out the wait windows and tossed them into the green chowder below.

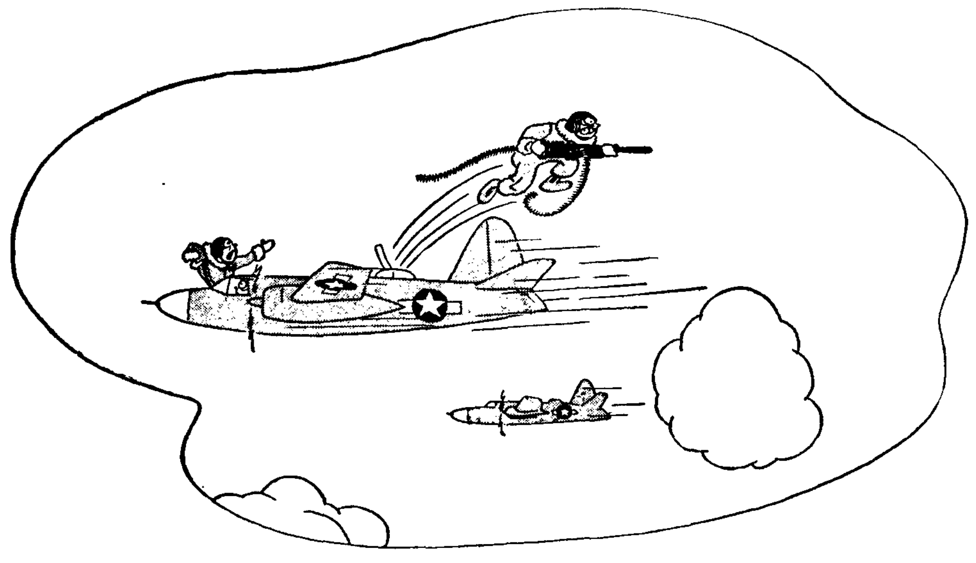
On these occasions, however, they never got quite the sweet harmony they achieved the day Jap guns shot their rudder controls away, severed the gas line, knocked out the hydraulic controls and jammed the bomb bay doors.

They were flying a mission over Tarawa just before the invasion started and Col. C. F. Hegy had brought the Tramp down to 1,000 feet so the gunners could strafe as the bombardier pinpointed his objective. Three bombs were away and all guns were firing when heavy machine gun slugs came pouring through the bomb bay doors, cutting the gas line. The pilot ordered all gunners to cease firing, due to danger of setting the aircraft ablaze, and the bombardier released the remaining bombs in one salvo on the target. When the pilot found his rudder controls also gone he maneuvered the plane away from the island with the engines.

Capt. Oliver Franklin, bombardier, hurried aft, plugged the line with his hand and found gasoline already more than inch deep in the after quarter. Fortunately there was no fighter opposition since it took twenty minutes to reach the inaccessible valve and turn it off, and by that time everyone was drenched and half blinded with gas. Meanwhile the pilot had jockeyed the plane on the homeward course and put it on automatic control.

For two hours and a half the crew worked in relays on the nine-inch catwalk which had become slippery with hydraulic fluid, over the open bomb bay doors and without parachutes—all the while raising the doleful question as to who had been so inconsiderate of Mrs. Murphy's chowder. The aluminum tubing used in the bombardier's hot air heater was found to be the right size for the hydraulic lines and a section was ripped out and used to by-pass the break. The real work was on the control cables, however. Using twenty strands of light brass safety wire Sergeant Herbert, engineer and top turret gunner, manufactured his own cables and others of the crew stretched the broken ends into position where they could be spliced. When the job was complete Colonel Hegy tried the controls. They worked, leaving the crew nothing more to worry them until the landing. When they reached their field the flaps would not let down, but they cranked down the landing gear, saving the one remaining push on the hydraulics for the landing.

The pilot ordered everyone into the tail, to make as much drag as possible, and they came in slowly to take advantage of every inch of runway. As the wheels touched earth, the crash crew heard voices raised in a howling hymn of thanks, but the words were those of Mrs. Murphy's chowder. Near the end of the runway the pilot applied the brakes and the big wheels dug into the gravel-like coral. They had sung the Tramp home again.



"Hey, wait a minute, Jenks—they'll come closer!"
—J. T. RAWLS & SGT. P. J. KAATZ

When In Rome?

A lot of people are doing things in this war they never did before. Take for instance a certain six-foot, four-inch native in Central Africa. A few years ago he attended to the solemn affairs of his little village and watched the seasons of rain and drought come and go. He took witch doctors for granted, and the witch doctors regarded him in the same way. Now the big native wears a long, straight, pink nightgown, slit to the knees on both sides, and stands on the wing of a C-47, washing the windows. When the nightgown gets in his way he pulls it up and ties it about his waist, revealing a pair of GI shorts. He frequently nods his head at the crew chief. His new speech is "OK. OK. OK."

Order of Daedalians

Officers and civilians who served as pilots in the World War and won their wings prior to November 11, 1918, are eligible for membership in the Order of Daedalians, an organization designed to perpetuate fraternalism founded during the war. Col. Charles H. Dowman, wing commander of the order, writes in to say that the organization hopes to enroll all former World War flyers who have been recommissioned and assigned to other branches of the service. His office is in Room 4C261, Pentagon, Washington, D. C. The order was founded at Maxwell Field, Ala., in 1933 with the late Brig. Gen. Harold H. George as first wing commander. It is named for Daedalus, a character in mythology, said to have been the first man to fly.

Vinged Wictory . . .

Last month we published a story called "She Wears A Pair of Silver Wings," written by Charlotte Knight, in which the writer told of the work being done by our Women's Airforce Service Pilots. All went very well down to the bottom of the first column where the story suddenly lapsed into a strange argle-bargle, due to an error in making a correction in the type forms. This mix-up made the story speak rather incoherently of WASPs donning "a distinctive PT fuselage," and made some mention of "violet ack-ack" and "violent ack-vember," whatever that is. Naturally we felt very sad about the mistake and went through the proper purification process, that is, a sergeant caught hell. Come to think of it, Ack-vember doesn't sound bad. It would be a perfect month to meet a WASP with a distinctive fuselage.

Widow

Due to the war we have begun to see the black widow spider in a softer light. The instrument repair department of the Sacramento Air Service Command, McClellan Field, reports that it has enlisted the services of a black widow named Agnes to buzz off a quota of web to be used in testing the accuracy of gun sights, transits and artificial horizon mechanisms. Agnes lives in a plexiglas drift meter cover and consumes a ration of such live flies as can be overtaken by aircraft instrument mechanics.

We are told that Agnes is able, due to some wonderful endowment, to spin a double web with as little effort as the ordinary spider whips out the one-strand. For this reason we readjust our opinion of the black widow. Until now, we had known only their less noble traits of darting out and attacking humankind from loose boards of out-buildings, or nipping flower gardeners high on the thigh.

PARACHUTES: LOST AND FOUND

Lost:

No. 41-9016, type S-1; return to Base Operations Officer, Kindley Field, Bermuda.

Nos. 37-8496, 42-28363, 42-1039224, all type S-1; return to Sub-Depot Supply Officer, 78th Sub-Depot, Selman Field, Monroe, La.

Nos. 42-279570, 42-459282, 42-448796, 42-745947, return to Lieutenant Wattman, Air Corps, Sheppard Field, Texas.

No. 40-1326, seat type S-1; return to Capt. E. J. Tetiva, 595th Bomb. Sqdn., Drew Field, Fla.

Nos. 42-715282, 42-369925, 42-151075; return to Parachute Department, Kingman Army Air Field, Kingman, Ariz.

No. 42-207092; return to 307th Ferry Squadron, Gore Field, Great Falls, Mont.

Nos. 42-646096, 42-227046, 42-465963, 42-6328 parachutes reported shipped from Keesler Field, Miss., to Boca Raton Field, Fla., have not arrived. Nos. 209983, 646333, 42-736693 missing; return to Boca Raton Field, Fla.

Nos. 42-267529, 42-200474, both S-1 seat type; return to Base Operations, AAFPS (Adv-2 Eng), Fort Sumner, N. M.

SUB-DEPOTS

Commanding generals of continental air forces and commands have been given command jurisdiction over sub-depots. This function formerly was exercised by the commanding general, Air Service Command.

This transfer of command, which became effective January 1, includes the transfer of all personnel, facilities, equipment and supplies assigned to such installations. The Air Service Command retains duties of technical supervision.

TAKE IT OFF

War paint will be removed from almost all aircraft of the AAF, the War Department has announced. Removal of the greenish-grey cover will give Army planes additional speed and substantially reduce their weight, it was pointed out. This action was taken upon recommendations of combat commanders, and while specialized planes overseas will retain their camouflage, practically all aircraft will come off the assembly lines a metal color. Camouflage will be retained where tactical considerations require it in combat zones. The AAF estimates that removal of camouflage will give a slight increase in top speed and reduce the weight of fighter types by fifteen to twenty pounds. Heavy bombardment planes will be lightened from seventy to eighty pounds.

EAGER BULLDOZER

Stock piles, as every airman knows, are damaged planes whose parts are removed to repair active aircraft. In combat areas the damaged planes take on an importance that is second only to the ones in flying condition. For that reason a touch of tragi-comedy creeps into a report we have from the Southwest Pacific. It all began when the general, making an inspection, gave an order to tidy up the stock pile and make things nice and orderly. An especially eager beaver misinterpreted the order and assumed that the general wanted the stock pile put in one neat bundle. Before anyone could stop him he took a bulldozer and herded the damaged planes into a huge pile twenty feet high. He cleared the area in a very military manner but, needless to add, pulverized thousands of dollars worth of equipment.

VERSATILE

Master Sgt. Russell E. Mackey, 33-year-old Montana farmer, is a qualified pilot, bombardier, gunner and engineer. He is also said to be the only enlisted four-engined bomber pilot in the AAF, having been checked out in both B-17 and B-24, despite the fact that he never attended an Army flying school. Last time we heard of the sergeant he had completed a tour in the Southwest Pacific and was back home flying a tow target plane at the Rapid City (S. D.) Air Base.

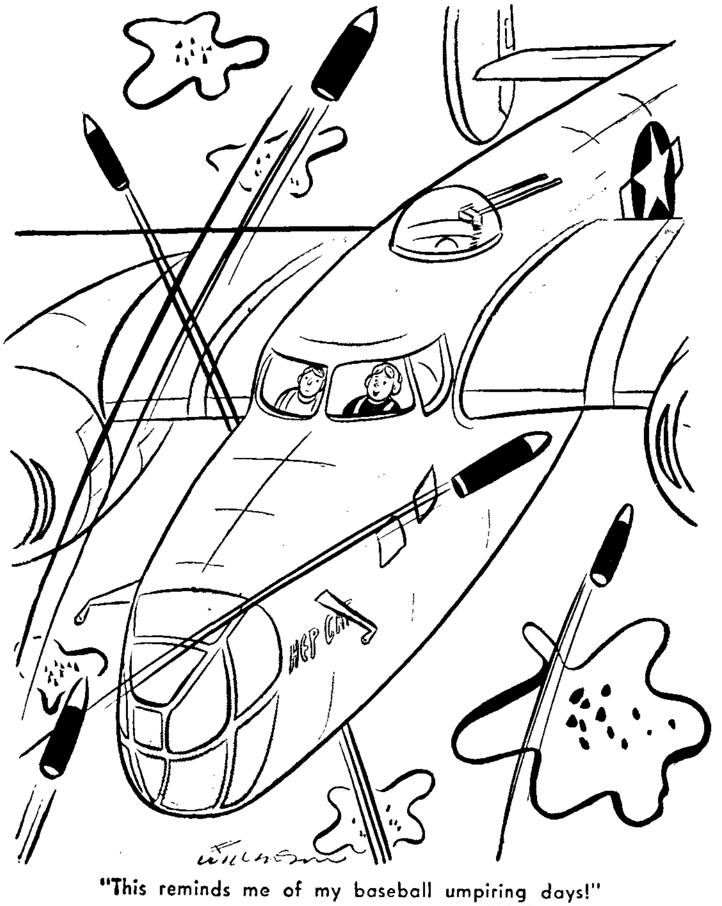
Mackey was a member of the 19th Bombardment Group, and his ship, Lazy Daisy Mae, was one of the three B-17s which took off from Australia one afternoon and headed toward the Philippine Islands to pick up General Douglas MacArthur, his staff and family. On that trip each Fortress was overloaded with blood plasma and medical supplies for the wounded on Bataan and Mindanao. Prior to that Sergeant Mackey was one of the crew which flew B-17s into Hawaii during the Pearl Harbor attack, and previous service in the islands enabled him to direct his pilot away from blasted Hickam Field to an obscure strip near Halewa beach.

In eleven years Sergeant Mackey has piled up 14,000 pilot hours and his co-pilots have been flyers of every commissioned rank up to colonel. Concerning his one-man crew status, a fellow Montanan in Mackey's squadron had the clearest explanation. "You take an old farm boy like Mackey," he said. "If he's got a big ranch he must be a specialist in every trade. If that same guy goes into aviation, he treats it like a big farm. He wants to know every acre of it."

THROUGH CHANNELS

Officers of the First Motion Picture Detachment, AAF, were sitting in the projection room in New York, viewing several reels of film which had just arrived from one of their combat camera units in India. Each scene was prefaced on the screen by a few frames which gave the scene number, subject, cameraman's name and other salient details of the picture. A couple of scenes had been shown when the commanding officer and his staff sat bolt upright and stroked their chins. A photographer's name had just been shown and then, shimmering before their eyes was a long take demanding: HOW ABOUT MY PROMOTION!

—THE EDITOR.



"This reminds me of my baseball umpiring days!"
—FRITZ WILKINSON

HOW IT BLASTS JAP SHIPPING

(*Continued from Page 14*)

bomb-strafing runs, resembled a small bathtub jammed with toy ships. Only these weren't toys.

They were desperately maneuvering heavy cruisers, light cruisers and destroyers; they were four and six and ten thousand-ton merchantmen; they were innumerable coastal vessels.

Over the township, a thick smoke arose to cover effectively the flak-positions while specks which we knew to be our lead B-25s roved in and out of the smoke.

As one, Henebry's lead ships opened fire, selecting their bombing targets with the speed so essential to successful attack bombardment.

Henebry himself dove down on a 5,000-ton freighter-transport, dropped a bomb directly down the hatch which we could see explode; Ellis, flying so low his B-25 looked like a speedboat, roared against a 4,000-tonner, silencing ack-ack posts on the vessel with triphammer blows from his .50 caliber guns.

Up and over he pulled, skipping his thousand-pounder into the merchantman's vulnerable side. He crossed the bows of a Jap heavy cruiser, ignoring salvos from the warship's eight-inch guns, and launched a second run on a two-stack 8,000-ton transport.

Again success was his—direct hit through the forward hold. (The tall cameraman reported seeing the vessel break in half and begin sinking rapidly.)

We were out of the harbor now, soaring over lava-pockmarked earth that blankets the mountains on the southeast shore of Rabaul.

Behind us, cruisers continued to hurl salvos in all directions; Mother and Daughter volcanoes were still heatedly, but vainly, attempting to repulse the final attackers; flak positions around Vunakanau made a curtain of anti-aircraft lead in front of us.

We thought it over then—but it wasn't. Ten Zeros intercepted our lagging Mitchell and made continuous passes for 25 minutes; other Nip fighters harassed the bulk of our leading force until P-38s, relieved from fighting over the harbor itself, hastened to break the momentary grip the Jap had over us.

Air combats were waged from the time we made our escape from the harbor until the last Nip despaired well south of Wide Bay and wearily circled to return home. From the Lightnings and from the effective fire of the Mitchell upper turrets, he sustained a thorough drubbing.

It would not be correct to say we flew home; we limped home. Every airplane in the Mitchell attacking formations, with the exception of two, returned with gaping wounds.

Major Henebry staggered 200 miles on one faltering engine, indicating a bare 110 miles an hour, before he finally crash-landed in eighty fathoms of water off Kiriwina Island. The entire crew was rescued by naval patrol boats.

His life raft shot out by anti-aircraft fire, Lieut. Jack Saunders flew 450 miles with the raft wrapped around his ailerons and tail—neither were recognizable as such when they were inspected that night.

His left engine blasted by Jap flak fire, Lieut. Benjamin Burgess feathered his prop as he sped at waterline level on his first run, continued the attack, sinking a Japanese destroyer, and wobbled home again on the lone engine.

And there was young Flight Officer Jack Harrington, making his initial mission as a first pilot.

Not only did Harrington score a direct hit with a 1,000-pound bomb on the biggest cruiser in the Harbor, but he brought his flak-shattered B-25 home safely.

As he circled to land, his hydraulic system failed and his right engine went out. Harrington landed that plane on two wheels and one engine—and he and his crew walked away from it unscathed.

But the hero of the day, in the eyes of the pilots themselves, was the late Maj. Raymond Wilkins, who lost his life in the attack.

Sweeping down the slopes, with Simpson Harbor before him, Wilkins' right wing was almost severed in half by a powerful burst from the heavy cruisers.

If he had turned from the target then, he had a better than even chance of making his way home or at least crashing in neutral or friendly territory.

But if he had turned, he knew, his whole squadron's attack would be disrupted. Wilkins chose to complete his last run.

Fighting controls all the way, he engaged a Nipponese destroyer leader, scoring a direct hit on it that spelled doom for the war vessel.

Then, barely retaining his grip on his mortally injured Mitchell, Wilkins raced on to level a waterline hit on a medium-sized freighter-transport.

He climbed up across that target, too —but then flipped over on his back and crashed into Simpson Harbor.

The results of his sacrifice, the results of the sacrifices of three other B-25 bomber crews and ten P-38 pilots, the results of the effort and the skill of those who went and who came back are already air power history:

47,000 tons of merchant shipping destroyed.
3 destroyers sunk.
1 heavy cruiser badly damaged.
53,000 tons of merchant shipping damaged.
1 heavy cruiser damaged.
2 destroyers damaged.
68 Enemy fighters destroyed in combat.
13 Enemy aircraft destroyed on the ground.
23 airplanes probably destroyed in combat.

American airmen had brilliantly fulfilled General Whitehead's earlier assertion that "assault, mast-high and tree-top attack bombardment are the keys to decisive results in aerial warfare."

They fulfilled General MacArthur's prediction that the "strategic potentialities of air warfare are only beginning to be realized."

They fulfilled General Kenney's year-old-pledge that Rabaul shipping would suffer a fate similar to, if not worse than, that sustained by Pearl Harbor on December 7, 1941.

All this was accomplished by that handful of men—not more than 500 in all.

Rabaul was not the first, nor will it be the last, great victory recorded by American attack air power in the Pacific. But it was the mightiest blow ever dealt one of the enemy's most powerful bases. ☆

MISTAKES IN 'ON THE LINE' PICTURE ON PAGE 44

1. It's not being done this year or any other year—taking connections off spark plugs with a pair of pliers. It's a sure way to crush connections. Reference: TO 03-5E-1.

2. Accessory bracket should not have been left on. Remove it to be put on the new engine installed in the airplane.

3. Oh, oh, there is no covering on the prop shaft. Men, this is a must! The shaft will rust or be damaged if a tool drops on it. Wrap the shaft in paper, conforming to Spec. No. AN-P-12, Grade A, or protect by plastic cylinder and place thread protector cap over the end of the prop shaft. Take a look at TO 02-1-35.

4. Somebody left the governor cap off. That nasty saboteur, dirt, will get in and cause unseen damage. Reference: TO 02-1-14.

5. Look at that! The carburetor is not only on the floor where it doesn't belong, exposed to dirt and damage, but it's also in for a beating if the engine stand moves. At this stage the carburetor should have been completely sealed in moisture proof envelope with 2 one-half pound bags of silica gel, conforming to AAF Spec. 17018. Also the sad looking gasket should have been discarded. Don't leave useless unserviceable parts on mechanical units. Look carefully at TO 02-1-1.

6. Of all prize boners, removing safety wire with a screwdriver takes the kewpie doll. Instead of trying to break wire by means of leverage, with likely damage to the surrounding surface, cut the wire and remove with pliers. Reference: Common sense.

7. Handy Andy up there must have picked up the first tool he saw, because who else ever heard of tightening rocker arm box covers with a crescent wrench? Adding insult to injury you're using the wrench backwards, bud. You'll burr the nut and injure your hand on that job.

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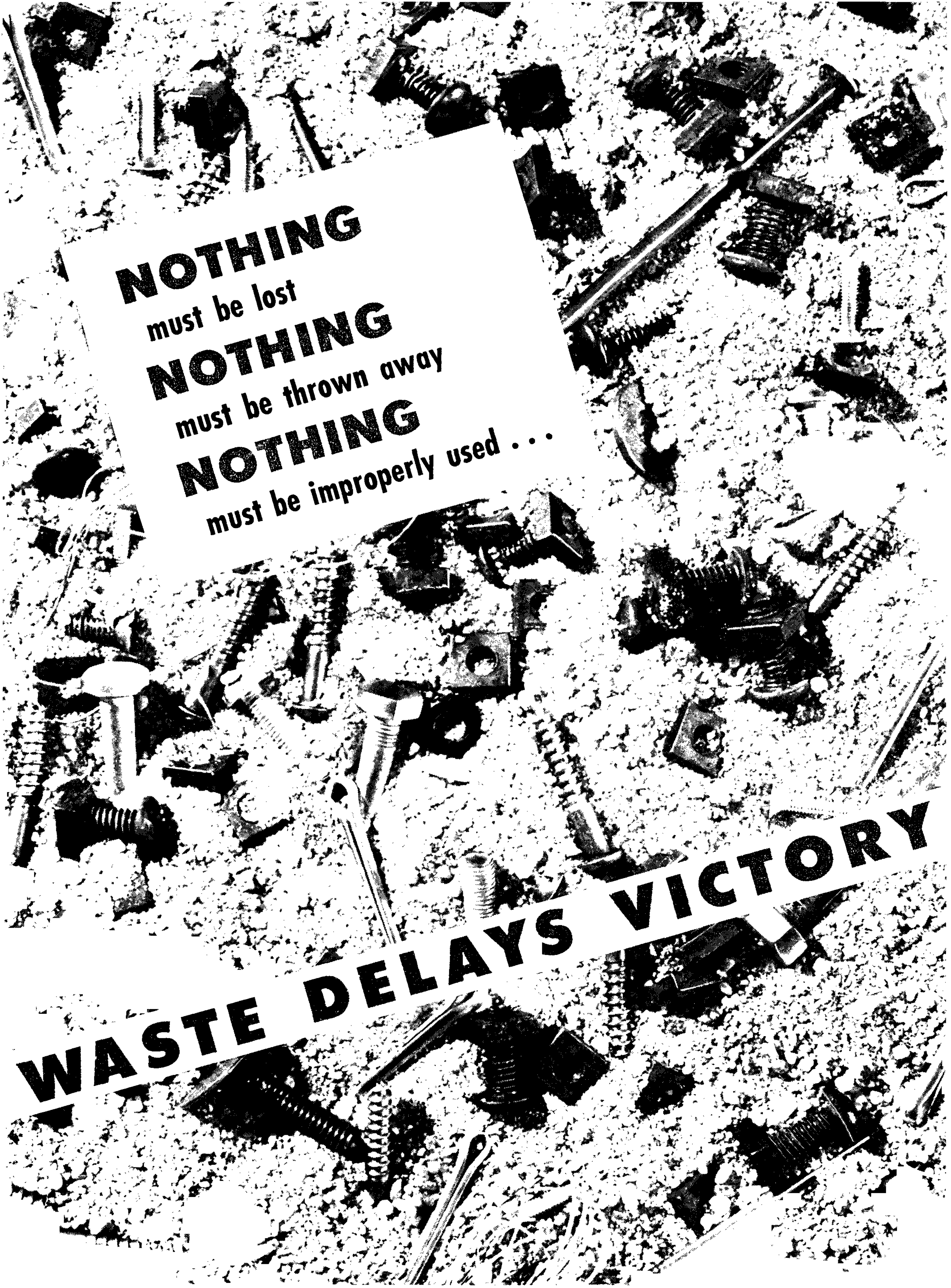
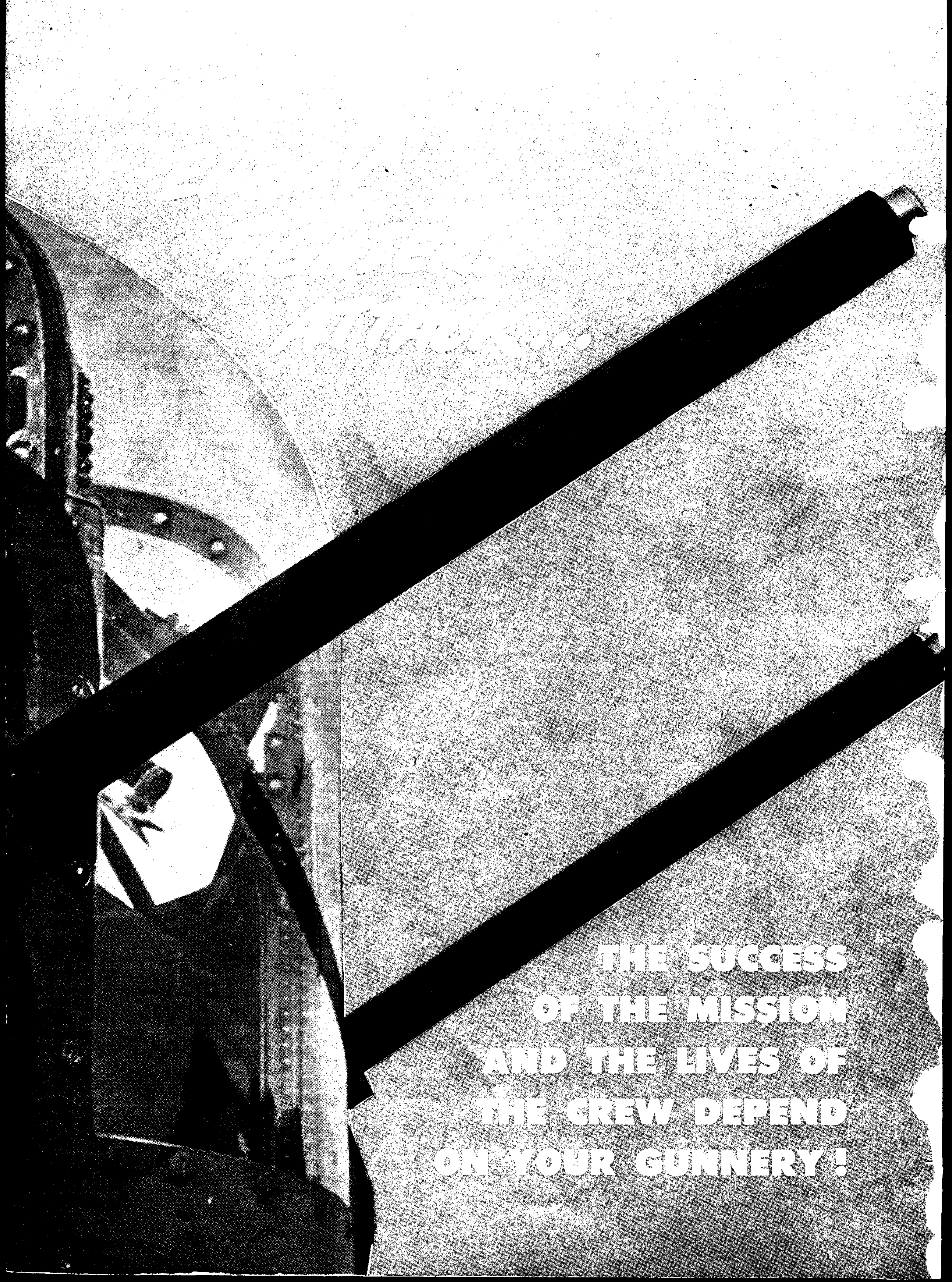


NOTHING
must be lost
NOTHING
must be thrown away
NOTHING
must be improperly used . . .

WASTE DELAYS VICTORY

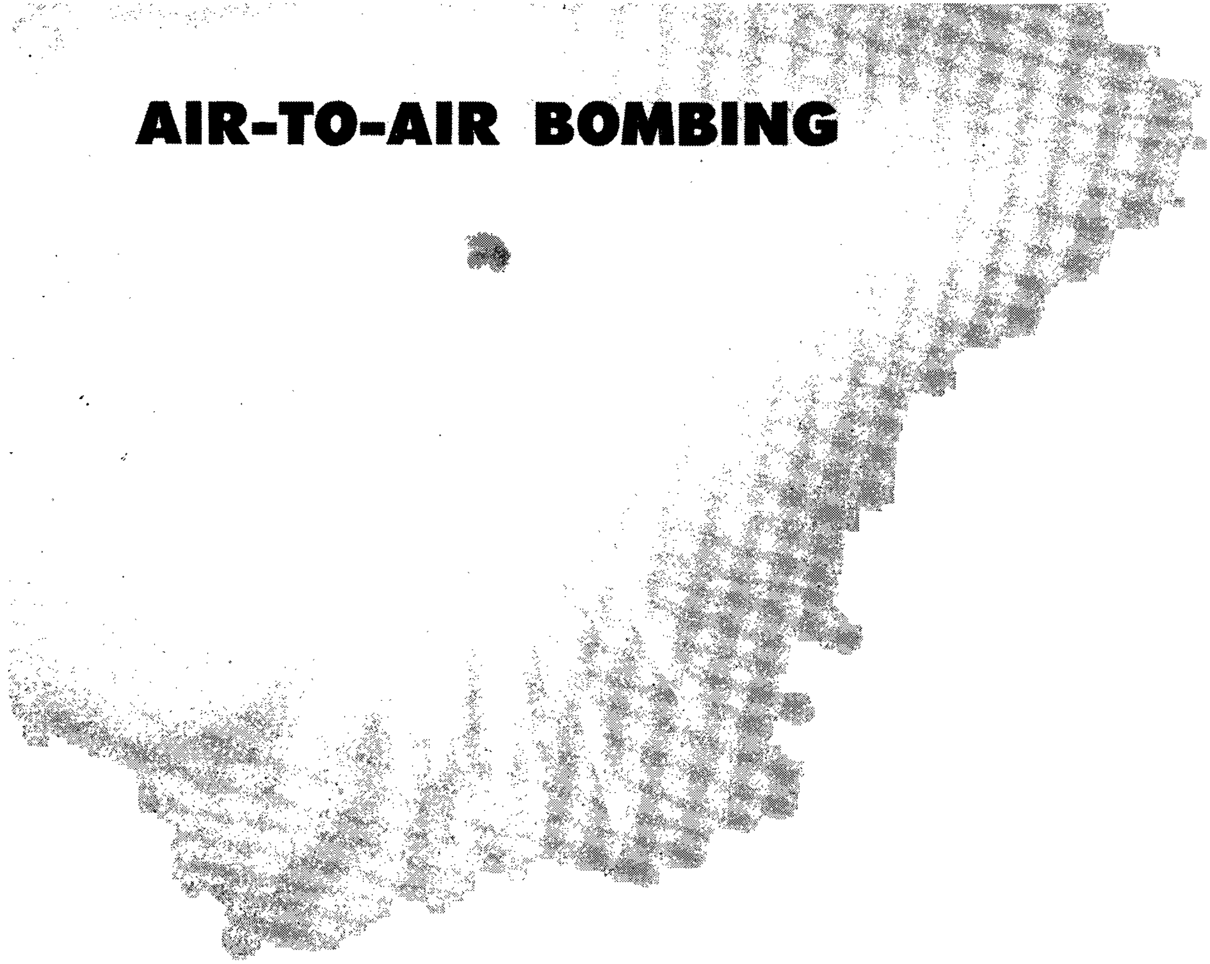

THE SUCCESS
OF THE MISSION
AND THE LIVES OF
THE CREW DEPEND
ON YOUR GUNNERY!

AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

MARCH 1944

AIR-TO-AIR BOMBING



The enemy continues to drop bombs on our aircraft in flight.

This remarkable photograph of a Jap aerial bomb, one of the few if not the only one ever published, was taken by First Lieut. Lawrence P. Bachmann, Air Force staff correspondent, while on a bombing mission in the Central Pacific.

Jap bombs such as this are reported to be accurately timed to explode five to ten seconds after they are dropped. Here the camera has caught the bomb explosion, showing white smoke streamers in a waterfall effect. Bachmann used a K-20 camera from the waist window of a B-24.

Both Germans and Japs are employing air-to-air bombing against our bombers. The evidence indicates that they place little faith in it as a destructive measure, but use it mainly in the hope of breaking up our formations. It has had little success.

Aerial bombs, generally speaking, have large lethal bursts, but hits are rare because the enemy has not yet achieved a high degree of bombing accuracy against fast-moving targets at high altitudes.

The idea of air-to-air bombing is as old as military aviation. During World War I, aircraft tried to destroy others in flight by dropping missiles of various kinds, including bricks and hand grenades. Even guns were thrown overboard at enemy fighters. ☆

CROSS COUNTRY

GROUND crews who know the habits of every sparkplug and cowling button on their planes but have to read the newspaper to learn what their charges do in the air are a thing of the past at a P-38 base in England.

They now learn from intelligence officers and from the pilots themselves just what their work amounts to when the planes meet the Luftwaffe. Once a week the crews and other ground enlisted men attend meetings at which pilots and ground officers explain just what the squadrons have been doing in the air over Europe.

This station works on the theory that, within certain bounds, the more men know about the job the greater the security will be, explains Capt. Walker Gabbert, an intelligence officer from Ojai, Calif., who adds that the plan also pays off in boosting the morale of ground men.

Attendance at the night sessions is entirely voluntary, but despite movies and other diversions on the field, it has been good enough to keep the meetings going for more than two months. Even workers from the orderly room, supply men and others who do no work around the planes turn out to learn what is doing in the air.

All squadrons at this field now hold the sessions, and the men look forward to them not only to learn a little more about the war but to hear the pilots' attitudes toward different phases of maintenance.

At a recent session Lieut. Gerald F. Leinweber of Houston, Texas, explained in detail what goes on at a briefing for fighter pilots. Acting as briefing officer and treating the men as if they were pilots, the lieutenant put them through a preflight session such as flyers attend before every combat mission.

He explained how pilots get the latest reports on the weather, where to expect heaviest fighter and anti-aircraft opposition, where to meet the bombers and how the escorting is to be carried out. He also discussed how that particular mission fitted in with the entire day's operations by other fighter and bomber outfits. Lieut. Arthur E. Hafstad of New York City went into further detail about the origin of the mission, how orders reach the squadrons through official channels and how the orders are acted upon before the take-off.

The sessions are not purely academic. Coffee and cakes occasionally are served—sometimes beer—and in the informal bull sessions which follow the men discuss manifold pressure, radio reception and gun performances with those who have learned the answers over Germany. Sgt. Morris Wegman, crew chief from Chelsea, Mass., buttoned it up this way: "It's one place where ground men can really learn the score."

FRONT COVER

This month's cover shows a P-38 at an AAF fighter base somewhere in England. For a picture story of the day-to-day life of a P-38 squadron based at this airdrome, see Pages 32, 33 and 34 of this issue.

ADDED ATTRACTION

While reading a dispatch from the Canal Zone, we felt a quick welling of pride for Pfc. Stefano Bianchi, a 6th Air Force military policeman at Guatemala City. We learned that Private Bianchi has become a symbol of military decorum since being assigned to the Central American base. This MP is described as a positively terrifying demon to those who misbehave, but a pal and a source of rich comfort to those who walk in the right. Private Bianchi, an East Boston boy, is looked upon with such respect that a Guatemala City night club, the Salon Granada, features him in its advertising. "Order — Gayety — Culture," the club boasts. "Only in the atmosphere of the Granada. Dine and Dance every Night." Then, in the space we ordinarily expect to find pictures of dancing girls, the Granada displays the triumphant face of Private Bianchi, Military Police.

GROUND SAFETY DIVISION

With the establishment of a Ground Safety Division in the Office of the Assistant Chief of Air Staff, Personnel, the AAF has broadened its safety program to cover all personnel and all establishments. Generally, it may be said that the Office of Flying Safety is concerned with all accidents which occur in the operation of aircraft as such, either in the air or on the ground. The Ground Safety Division is concerned with all other accidents.

It is the job of the Ground Safety Division to develop and supervise a program looking to the elimination of accidents, occupational hazards, and personal injury other than those covered by the Office of Flying Safety. It embraces all personnel, both military and civilian. As stated by Lieut. Col. W. L. Tubbs, chief of the division, the purpose is to reduce time losses resulting from accidents in training and production activities and to conserve

manpower and materiel by insuring safe working conditions.

The division will review the ground safety operations of all commands and air forces to discover and correct deficiencies. This does not conflict with the responsibilities of the Air Provost Marshal, who continues to supervise internal security matters, including safety in private facilities having contracts with the Army Air Forces. The safety program and accident prevention activities relating to such plants, however, are subject to the technical direction of the Ground Safety Division for integration with the over-all AAF ground safety program.

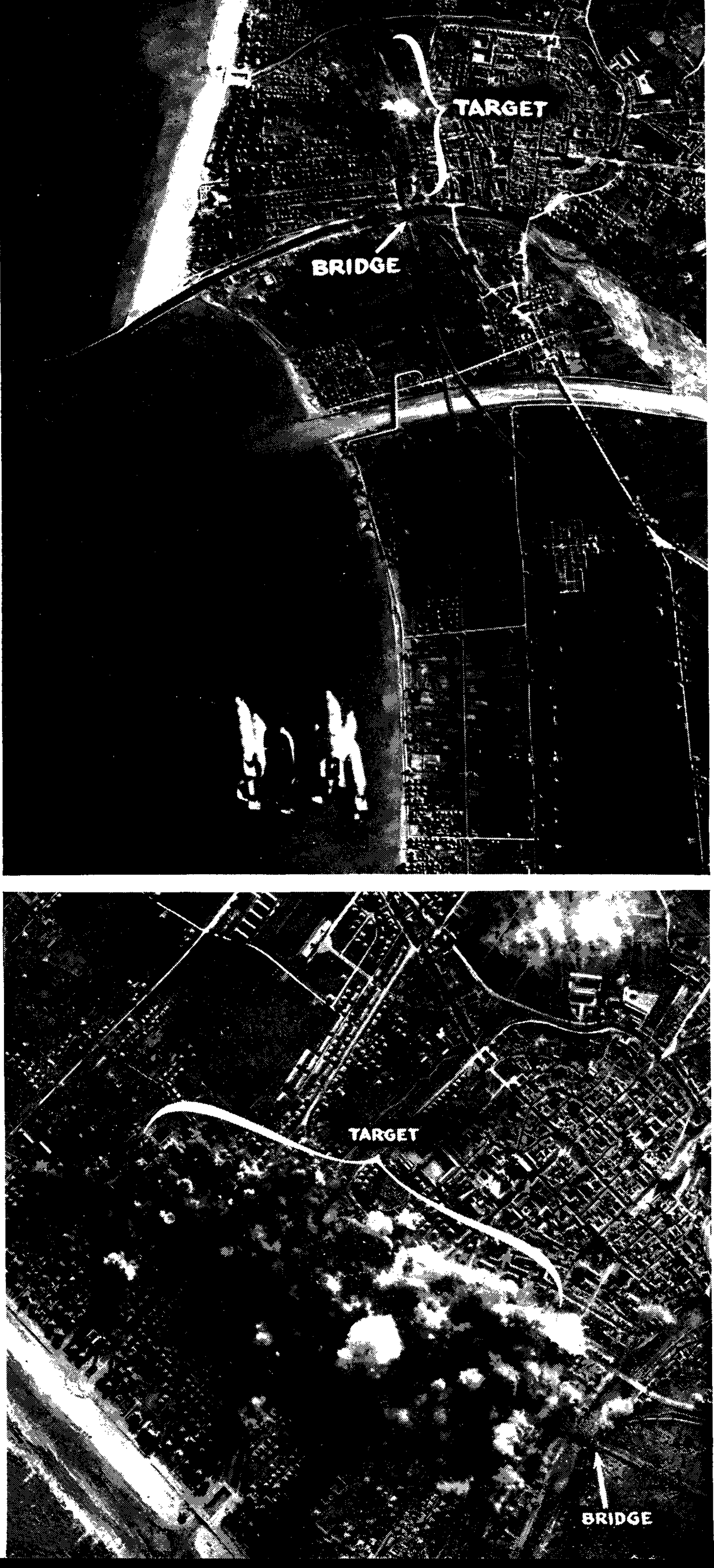
High Man on a Totem Pole

We learn that the Polynesian-Melanesian natives of a South Pacific island have taken quite a fancy to Capt. William R. King of the 13th Air Force, officer in charge of native laborers on the island. They have conferred upon him the honorary title of Chief Captain Goodheart. So far, Chief Goodheart's most exacting duty has been to attend as honored guest at a feast which followed the wedding of a prominent native son—an elaborate affair with entrees of fish and chicken and meat, certainly no onerous task. In addition to his title, Captain King has been endowed with such tokens as diving glasses, grass skirts, war clubs and a totem pole.

Chitt'lins in London

Bringing you what we faithfully believe to be the war's first mention of chitterlings, we pass along the contents of a V-letter just delivered from Lieut. Roy Wilder, Jr., now stationed in England. When the lieutenant left the States he carried with him a half gallon jar of chitterlings from his native hearth in Spring Hope, N. C. Despite the cold, grey, unappetizing fact that chitterlings are simply pig intestines, the lieutenant handled them with doting care and trusted their transportation to no one but himself. The jar was at his side every moment, taken along to make a great feast when three other North Carolina boys, also in England, could hold a reunion. Here, below, is an account of the chitterling strut as described by Lieutenant Wilder. We rush it into print as revealing a heretofore unknown contribution to morale.

"Well, we finally all got together,"



A perfect sighting from 24,000 feet enabled this bombardier to spill his bombs squarely on the Rimini railroad yards in northern Italy. To gain an idea of the amount of drift the bombsight computed for the trajectory, run your finger from the bomb cluster straight forward along the flight path. Then examine the lower picture and note the point of the impact which can be identified in both pictures by the bridge leading into the railroad yards. This December attack caused two explosions, set off a number of large fires and left the yards and much rolling stock beyond service to the enemy.

Wilder's letter began. "First we made corn dodgers from meal which John had picked up in Scotland. Then Allen, loudly contending that he was the only person who could be trusted with the real cooking, put the chitterlings in a skillet and soon the good aroma wafted over the room. We drew deeply of the wonderful odor and grinned at each other with keen anticipation.

"Now and then someone would yell, goat-like, in true North Carolina fashion: 'Ain't it hell! Chitt'lins in London. Man, this is fittin'.' With each such outburst Allen would dash in from the kitchen, tackle somebody around the waist and play football for a moment in contagious glee. Bill Speight (Navy) made several speeches on virtues of the simple life and among us we decided not to attempt to educate gourmets to chitterlings, but to devote our lives to keeping this delicious ritual on its Carolina hearthstones.

"When the chitterlings were done we ate them, smacking tenderly over each crisp, brown morsel. And all the while we kept watering that little pint of whiskey to make it last longer. Bill quoted Churchill that 'These are great days,' and we, in gratefulness for our reunion, fully agreed. However, we are certain that neighboring Londoners, awakened by the unique scent of cooking chitterlings, decided in cold and sudden sweat that surely, at that moment, Hitler had sprung a secret weapon."

Night Spider

The Black Widow, the AAF's new night fighter, designated the P-61, has been announced officially by the War Department. The new plane, heavily armed and armored, is powered by two Pratt & Whitney engines. Development began more than three years ago and contract for the first model was let to Northrop Aircraft of California in January, 1941. The plane is the outgrowth of intensive research and development by AAF and Northrop technicians, directed toward production of a powerful and effective night combat weapon, equipped with the latest devices. Details of the Black Widow's performance remain secret.

Flight of Fancy

Probably the first attempt ever made to glorify kitchen police duty is reported from Stuttgart (Ark.) Army Air Field. In the words of the base PRO: "The lonely figure of a soldier wrapped in a field jacket against the early morning chill . . . strides stealthily down the long aisle between the rows of sleeping men. His flashlight cuts an eerie shaft in the pitch dark as he seeks out the name tag. He gently nudges the relaxed hulk in the bunk. 'Madigan,' he whispers. 'Your flight takes off at 0445. You've got the China Clipper'."

Here the spell ends, for basically there is no way to beautify kitchen police. The flight at 0445 is to the mess hall. The China Clipper is pretty lingo for dishwasher. Somehow we still like the old-fashioned way.

Beyond the Call of Duty

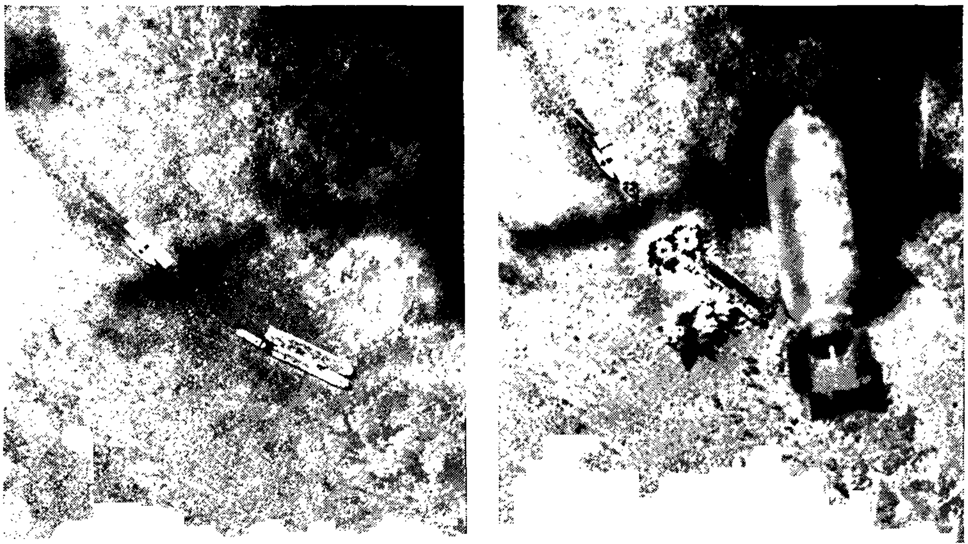
The Medal of Honor has been awarded to three more members of the AAF, two of whom gave their lives as total contribution toward the final victory.

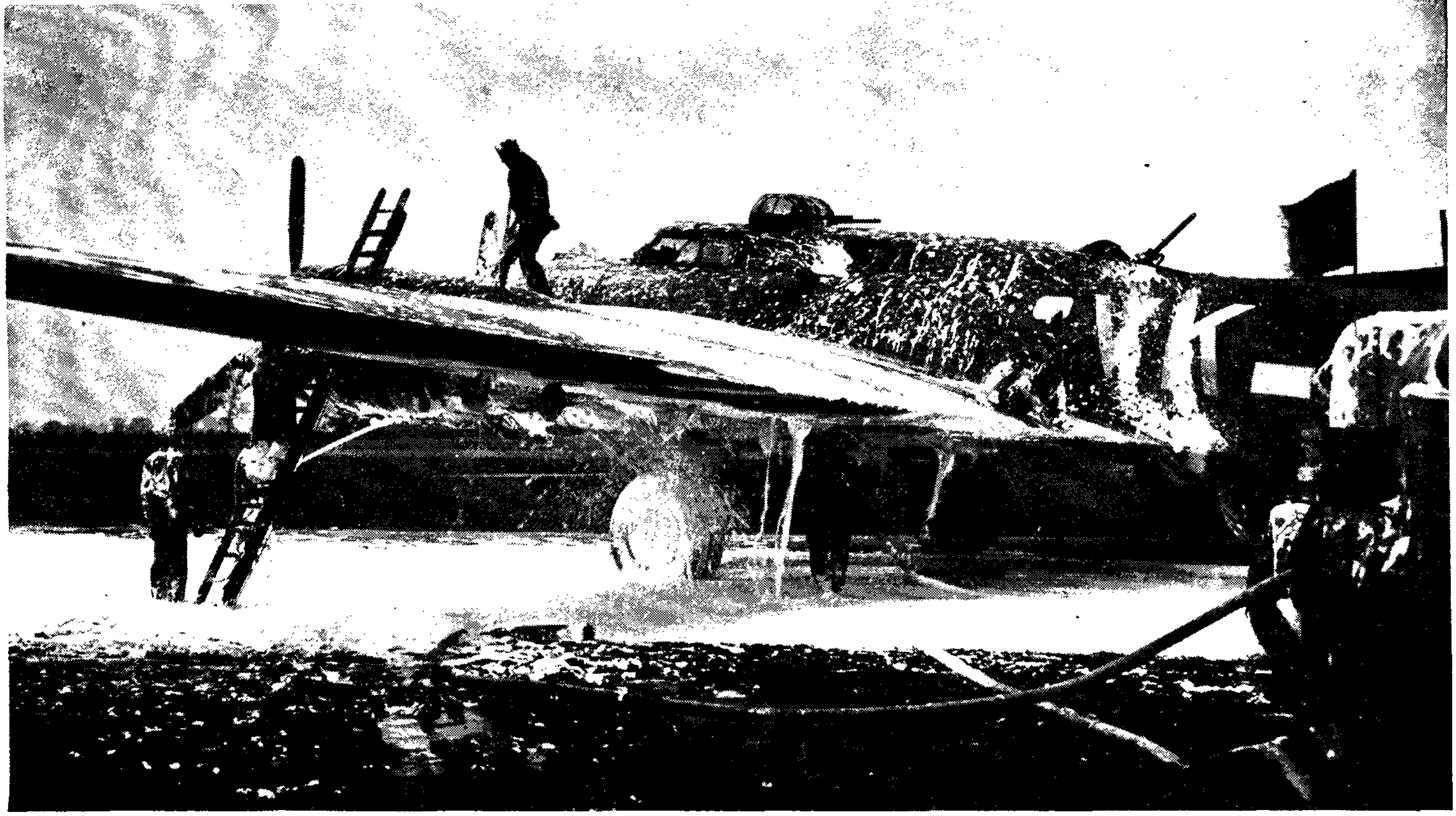
Second Lieut. John C. Morgan (then flight officer) was serving as co-pilot of a B-17 which was attacked by a large force of enemy fighters over Europe. During the attack the oxygen supply to the tail, waist and radio gun positions was knocked out; a cannon shell burst through the plane's windshield and split open the pilot's skull, leaving him in a crazed condition. In words of the citation: "The pilot fell over the steering wheel, tightly clamping his arms around it. Flight Officer Morgan at once grasped the controls from his side and, by sheer strength, pulled the airplane back into formation despite the frantic struggles of the semi-conscious pilot. The interphone had been destroyed rendering it impossible to call for help. At this time the top turret gunner fell to the floor and down through the hatch with his arm shot off at the shoulder and a gaping wound in his side. The waist, tail and radio gunners had lost consciousness from lack of oxygen and hearing no fire from their guns, the co-pilot believed they had bailed out. The wounded pilot still offered desperate resistance in his crazed attempts to fly the airplane. There remained the prospect of flying to and over the target and back to a friendly base wholly unassisted. In the face of this desperate situation Flight Officer Morgan made his decision to continue the flight and protect any members of the crew who might still be in the ship. For two hours he flew in formation with one hand at the controls and with the other holding off the struggling pilot before the navigator entered the steering compartment and relieved the situation. The miraculous and heroic performance of Flight Officer Morgan on this occasion resulted in the successful completion of a vital bombing mission and the safe return of his airplane and crew."

Maj. Ralph Cheli was leading his squadron in a dive attack on the heavily defended airdrome in New Guinea when intercepting enemy aircraft centered their fire on his airplane, causing it to burst into flames while still two miles from the objective. The major's speed would have enabled him to gain sufficient altitude to parachute safely, but this action would have resulted in his formation being disorganized and exposed to the enemy. "Although a crash was inevitable, he courageously elected to continue leading the attack in his blazing airplane. From a minimum altitude, the squadron made a devastating bombing and strafing attack on the target. The mission completed, Major Cheli instructed his wing man to lead the formation and crashed into the sea."

Second Lieut. Joseph R. Sarnowski volunteered as bombardier of a crew on an important photographic mapping mission

While on patrol along the Irrawaddy River in Mandalay, bombers of the 10th Air Force found this target of Japanese freight carriers being towed by power launches. From 10,000 feet, the first stick of explosives may be seen bursting over the river craft, while more bombs are on their way to the target. Three freight barges and their towing launches were destroyed in this attack, along with their cargoes of Jap supplies. These craft usually make for shore cover when air attack is imminent. Shadows shown on the surface of the river were caused by clouds.





After ordering his crew to bail out of their burning B-17 on the Oschersleben mission January 11, Lieut. Jack W. Watson managed to fly the aircraft back to a base in England. This picture shows a firefighter crew smothering the flames with liquid foam. The man standing on the wing, who has checked to see that no personnel have been left inside, directs the stream of the foam toward remaining flames. Lieutenant Watson, by the way, is the pilot who gained dubious fame by buzzing Yankee Stadium during the opening game of the World Series last fall.

covering the heavily defended Buka area, Solomon Islands. When the mission was nearly completed about twenty enemy fighters intercepted. "At the nose guns, Lieutenant Sarnowski fought off the first attackers, making it possible for the pilot to finish the plotted course. When a coordinated frontal attack by the enemy extensively damaged his bomber, and seriously injured five of the crew, Lieutenant Sarnowski, though wounded, continued firing and shot down two enemy airplanes. A 20 mm shell which burst in the nose of the bomber knocked him into the catwalk under the cockpit. With indomitable fighting spirit, he crawled back to his post and kept on firing until he collapsed on his guns. Lieutenant Sarnowski by resolute defense of his aircraft at the price of his life made possible the completion of a vitally important mission," the citation concluded.

HOT PILOT

From the Panama area comes word of Willie, an air-minded raccoon who ambled in from the jungle one day and assumed a place as second in command of an outlying fighter squadron. Willie thrived on government rations and appeared quite contented. He found a home in the Army, as we sometimes say.

It was not until several weeks ago, however, that Willie took up flying as a vocation. Now he gets a bigger kick out of hitching a ride than any orderly room autocrat. Willie's first trip was with a pilot making a routine flight to another field in the area. The plane taxied to the flight line for servicing and the mechanic began his chore. Then suddenly he drew back aghast (at least, aghast) when he saw a small furry head with two beady, black eyes peering out at him from one of the landing wheel wells. Those eyes were Willie's. He had just completed his first flight. The return trip was made in a cardboard carton in the cockpit.

All efforts to keep Willie out of a plane proved futile, however, and a few days later he went aloft on a gunnery mission, again traveling as ex-officio co-pilot in the same wheel well. Since that time, pre-flight inspections have not been considered complete without a careful check on Willie.

AFTER DUE CONSIDERATION

We have heard it said that the first American flyer to examine a German aerial rocket is Staff Sgt. George T. Rankin, 29-year-old gunner from Fountain City, Tenn. Rankin's introduction came at the height of a battle when an object came through a waist window and hit the floor behind him.

"It looked like a dry cell battery stuck in one end of a stove pipe," Rankin said. "For a fraction of a second I thought of taking it back to England for analysis. But that fraction was also long enough for me to throw it out. A few seconds later I saw it explode far below."

HATS OFF TO FORM 1

Capt. Robert E. Smith, one of the first fighter pilots to reach China after Pearl Harbor, has a particularly warm spot in his heart for the Form 1. Returning from Hong Kong after a raid, the captain was forced to make a crash landing on a river bank. He slipped on the shoulder harness, but found that the snap was missing. He broke off the pencil from his Form 1 and used it as an improvised snap. When the crash came the pencil held. History might have taken a different turn if Napoleon had carried a Form 1 at Waterloo.

OFF BASE

An ME-410 which had been out at sea on a photographic mission made a grave error in navigation recently and came sailing into an Allied airdrome at Monte Corvino in Italy. After a normal circuit the plane came in with landing gear lowered, oblivious to the large number of Allied aircraft on the ground. As the German was turning in from his downwind leg, anti-aircraft fire was opened by the ground defenses, in response to which Very recognition signals were fired from the aircraft. The fire ceased and the plane made a normal landing, during which the Germans discovered their mistake.

At the end of the landing run the aircraft swung around quickly and the motors were revved up in an attempt to take off again. Two RAF officers intervened by driving a truck in the path of the aircraft, and when the pilot attempted to swing clear the truck blocked him out neatly. Meanwhile, one of the RAF men jumped from the truck and covered the Germans with his pistol. Under this persuasion the radio operator jumped out of the plane and the RAF officer took his place and ordered the pilot to shut off the motors. It was only after the pistol was pressed to the German's neck and the Englishman seemed determined to do great bodily harm that the engines were stopped. The crew and aircraft were taken intact.

Suds in His Eye

Some AAF crewmen arriving in England fail to realize that London is really quite a city. Recently an engineer-gunner staff sergeant got a few days leave and went to London to look around. As a tidy afterthought he took his soiled laundry along to get it cleaned while he spent his days going from museum to museum. He alighted from the train, strolled up to a street and found a likely looking establishment to leave his clothes. After carefully noting the shop's name the sergeant set out to entertain himself. When the day of departure came the young man took a taxi and named the shop. At that moment the sergeant learned that the laundry firm had 200 branch stores in the city. After running up quite a taxi bill, searching at random, the American gave up. It was worse than trying to find all the Automats in New York City. Fortunately, a girl attendant at one of the stores offered to trace the package. Sometime later she mailed it to the sergeant at his base.

He Can Do No Right

Bombardiers probably take more ribbing from squadron wiseacres than any other member of an aircrew. At best the bomb-dropper has a hard enough time getting credit for his work—and if pictures show the target well splattered he is told solemnly that it was sheer luck, or that he simply closed his eyes and let them go. If the target was missed, however slightly, the bombardier really has a tough time. At one station in the European Theatre of Operations, after a mission that was only partially successful, an elaborate drawing appeared on the side of a Nissen hut. It showed a man being led by a Seeing-Eye dog and the inscription read, "That's our Bombardier."

Beating Their Gum

Flak tore into the radio compartment of a B-26 over Italy and partially severed a hydraulic fuel line. Lieut. D. L. Gibson, the pilot, informed of the fluid spilling away, had visions of a useless landing gear and a belly landing. Two staff sergeants reacted in what seemed like complete apathy, however. They broke out a first aid kit and began munching chewing gum. Wayne C. Armstrong, radio gunner, and Robert L. Weldon, engineer gunner, then combined their gum into one sizeable wad and plugged the flak hole in the line. Over this they applied adhesive tape.

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AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

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OUR JET PROPELLED FIGHTER

By Capt. Ezra Kotcher

Fighter Branch, Engineering Division, Materiel Command

When it was announced that the AAF had a jet propelled airplane in production, there was considerable speculation among writers and aviation commentators. Some of the pronouncements, by persons who seemed astounded by the idea, had a certain dream-like quality; others offered rather sober discussions on the subject. So it seems quite in order that some popular misconceptins should be cleared up concerning the Army's first jet propelled military aircraft.

This airplane *is not a rocket plane.* It is propelled by a *turbo-thermal* jet engine. It is a twin engine, single-seater fighter plane with tricycle landing gear, built by Bell Aircraft. Its engines were produced by General Electric Company on modifications of a British design by Group Captain Frank Whittle, RAF. It is very effective at high altitude, but it doesn't look at all "Buck Rogers," and a layman seeing it in flight might not notice anything strange about it except its sound. Several hundred flights have been made.

The airplane is, perhaps, the greatest new development in aeronautical engineering of the last decade. The present-day, propeller-driven airplane begins to be stymied by the effects of compressibility at speeds much above 450 miles an hour; if much greater speeds are to be attained, they undoubtedly will be accomplished through jet propulsion. The next years will find the development of high speed, high flying planes definitely tied to the development of the jet propulsion engine.

Right now is a good time to define a few terms. When engineers speak of jet propulsion, they mean normally any form of reaction motor which develops its forward thrust by the rearward emission of a jet of air, gas or liquid. When a boy blows up a toy balloon, releases it, and it flies wildly about as air escapes from it, the lad has demonstrated a simple form of jet propulsion.

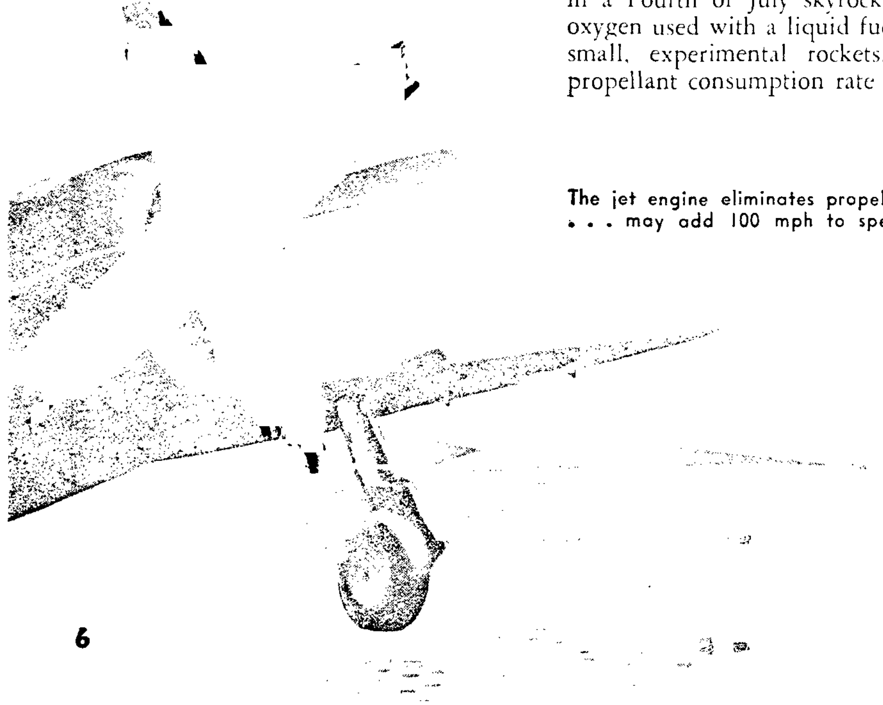
The development of jet propulsion; its future influence on the design and performance of our aircraft.

A rocket, then, is jet propelled. Engineers, however, define a rocket as a device which carries along with its fuel the oxygen, in some form or another, necessary to burn the fuel. This could be black powder, which contains oxygen, as in a Fourth of July skyrocket, or liquid oxygen used with a liquid fuel as in some small, experimental rockets. The high propellant consumption rate severely limits the rocket's endurance. Rocket motors have been used in assisted take-off for conventional airplanes. The "bazooka" gun is a good example of a rocket used as a weapon. When we begin wandering in the vacuum of interstellar space like the science-fiction fellows expect us to do one of these days, we will have to use a form of rocket carrying its own oxygen to burn the fuel necessary for producing the propulsive force to accelerate through space.

The turbo-thermal jet propulsion engine, on the other hand, uses the surrounding atmosphere as the oxygen supply necessary for combustion. It operates well in the stratosphere, but it cannot function in the regions where there isn't any air. The magnitude of its propulsive force, somewhat like that of the normal eciprocating engine, falls off with increasing altitude, unlike that of the rocket which can maintain relatively constant thrust with altitude. It is incorrect to refer to the type of jet propulsion unit we are using as a "rocket."

The development of the present jet propelled airplane was accelerated early in 1941 when General H. H. Arnold, who had been interested in the subject, called for reports on how experiments were progressing in this country and in England. Much research had been carried on in the United States, but no designs had gone beyond experimental stages. The British, however, had built and flown in Gloucester, England, in 1941, a small, experimental plane propelled by an engine designed by Group Captain Whittle, a brilliant aeronautical scientist who had been working on the idea for years. After a visit by General Arnold to England and conferences with the British, it was decided to go ahead on Whittle's designs and build the unit for a military airplane to be produced here in the United States.

In late summer of 1941, several meetings were held in the offices of Maj. Gen. Oliver P. Echols, now Assistant Chief of Air Staff, Materiel, Maintenance and Distribution, in Washington. In order to expedite development, General Electric Company was chosen to build the unit because of the knowledge its engineers had gained in development and construction of the turbo-supercharger for the



The jet engine eliminates propellers . . . may add 100 mph to speed.

Army. The completed jet propulsion motor was to resemble very closely a turbosupercharger, and GE was picked arbitrarily because the utmost secrecy of the project would allow no announcements and solicitation of bids done in less hushed instances. Bell Aircraft, experienced in building fighter planes, was given the job of constructing the aircraft.

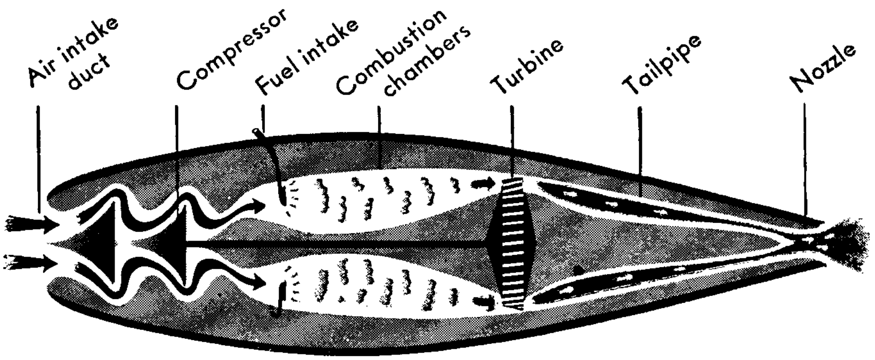
Brig. Gen. B. W. Chidlaw, now chief of the Materiel Division, was appointed liaison officer on the project, coordinating activities at Bell and GE with the British and Washington. Under Brig. Gen. Frank O. Carroll, chief of the engineering division of the Materiel Command, Col. Don J. Keirn was named engine project officer, to proceed immediately to England and obtain one of Whittle's engines, and Col. Ralph P. Swofford, Jr., was designated airplane project officer. Work for these men was to be hectic and nerve-wracking for the next year. In addition to the strain of the intense secrecy of their work, the new designs and methods involved in the project called for much travelling, many long conferences and numerous decisions. They even prepared a press release and hid it deep in the files so they could be ready, in case of any leak, to allay and direct speculation and publicity.

Keirn returned to this country with a Whittle model on October 1, 1941, just a year to the day before the completed plane was to make its first official flight. In April, 1942, General Electric, which had modified some features and redesigned others of the Whittle motor, made the first test run on the jet propulsion unit.

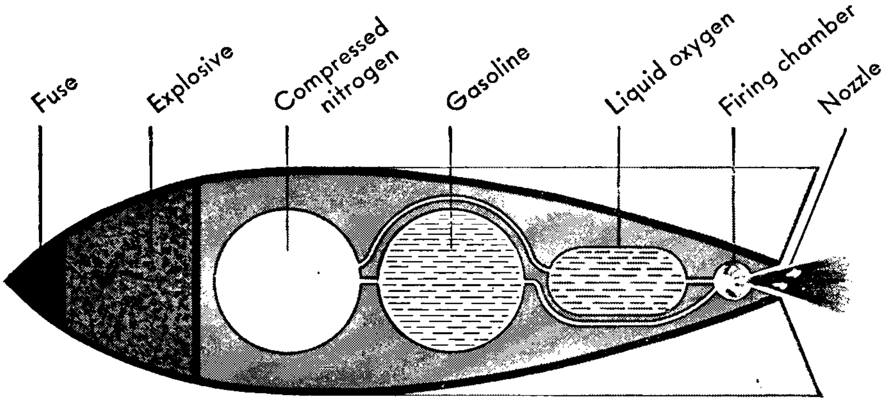
Then in September, 1942, at a remote station built specially for tests on the new plane, which the British call "the Squirt," preparations were made to fly the world's first jet propelled *military airplane*. Ground tests were run and on September 29, with an observer in a special open cockpit in front of the pilot, taxiing tests were conducted. Later, the plane made a stalled take-off to a height of one foot, then another to two feet. It is interesting that these were made with the right engine only since some trouble had developed with the left and it was shut down rather than delay the tests.

On October 1, Robert M. Stanley, chief test pilot for Bell, flew the plane to 25 feet, came down and took off again to a height of 100 feet. This flight pleased Stanley and the Army observers. The following day, two more flights were made, one to 6,000 feet and the other to 10,000 feet. They knew then that they had a military airplane suitable for the purposes for which it was built. On the same day Col. Lawrence Craigie, then chief of the Aircraft Project Section, now a brigadier general, took the plane up, getting the honor of being the first Army officer to fly it, and breaking the hearts of General Chidlaw and Colonels Keirn and Swofford. These three had planned to draw straws to be the first to handle the plane, but when the day came Keirn and Swofford were in England for duties relating to the jet propulsion project, and General Chidlaw was at his desk in Washington, feeling shackled.

THERMAL-JET AND ROCKET SYSTEMS OF JET PROPULSION



THERMAL JET: This formalized conception by a staff artist of a jet propulsion motor is not intended to illustrate mechanical workings or portray any specific engine design. In the thermal-jet system, oxygen is obtained from air which enters intake ducts and is sent by compressors into combustion chambers. Fuel is added to the compressed air and ignited. The resulting gases flow through a turbine, which drives the compressors, and from there to a tailpipe where they are nozzled down, attaining great speed and forming the propulsive jet.



ROCKET: Both the thermal jet and the rocket systems get their thrust from a rearward jet which forces the mechanism forward. The rocket contains all the elements needed for combustion. In the example above, compressed nitrogen provides pressure to force gasoline and liquid oxygen into a firing chamber where they ignite, and the resulting high-pressure, high-temperature gas escapes and sends the rocket forward. Many rockets use a relatively slow burning powder instead of liquid fuels. The powder contains the oxygen necessary for burning.

Tests were continued at the lonely station and some of the usual bugs had to be exterminated. The plane had so little vibration that a vibrator was placed in the instrument panel so the pilots could be sure the instruments were not stuck and were working properly. When the plane was taken on the field, it was covered with canvas and a flat, four-bladed mock propeller, cut out of plywood, was stuck on the nose, where dangling at a cockeyed angle and sticking out from under the canvas, it would give any pilot accidentally flying over the area the idea he was looking at a normal airplane. Now and then when the plane was in flight, a thin trail of smoke would follow from the jets and men in control towers at other fields would report they had seen a plane on fire. This slight smoke, when seen along the plane's trail, somewhat resembled typical exhausts of Diesel engines, and a few land-bound observers had the AAF developing a Diesel engine for fighter planes.

Eventually, of course, General Chidlaw and Colonels Keirn and Swofford got to fly their airplane. Officers at the dreary station had some fun staging a ceremony each time a new man flew the jet propelled plane. They would remove the "old-fashioned" propeller from the initiate's AAF collar insignia. Maj. Gen. W. E. Kepner, now a fighter command leader in England, also flew the ship.

General Arnold and other officers of the AAF decided upon a jet power plant when present planes gave indications they had about reached the limit of performance obtainable by means of propellers. The limit was imposed by the rapid falling off in the efficiency of the propeller when the effects of compressibility set in at extremely high speeds.

Many persons have probably been puzzled by the fact that it has taken aeronautical engineers all these years to discover that air is compressible. This can be explained by the fact that when dealing with low air speeds air can be considered as being incompressible (like water) and air is treated as such theoretically with negligible error. At speeds of about 200 mph compressibility effects can still be ignored. Above 300 mph you have to watch your step. Above 400 mph the incompressible aerodynamic theory for flow around wings, fuselages and windshields, shows serious signs of error, and a more cumbersome mathematical theory has to be evolved to explain what is happening. Theory or no theory, a certain new phenomenon is encountered under high speed airflow, a condition manifesting itself in an enormous, rapid increase in drag — which is strictly not good.

The phenomenon is called a compressibility shock wave since it manifests itself by a sudden decrease in the airflow speed and a sudden rise in pressure and temperature. It's sometimes referred to as a compressibility "burble" since the streamline flow pattern breaks down. Compressibility shock waves (or "compressibility" as it refers to its drag increasing effects) are always linked with the velocity of sound because when the local airflow at any point along a body reaches the velocity of sound, you will get compressibility. That does *not* mean that the airplane or body has to be moving with the speed of sound, because there is always a local increase of air speed over the object in motion. That is why compressibility headaches occur at subsonic speeds. At supersonic speeds, such as in the case of projectiles, the shock wave is just in front of the body and can be compared to the bow wave in front of a ship travelling through the water.

It is obvious that in order to delay the development of a shock wave, the thing to do is to minimize the local increment of velocity over an object. This is done by keeping thickness ratios down. Because of its rotation, the propeller is affected by compressibility long before the wings of a plane are affected, first at the rather thick shanks and then at the very thin tips where the rotational speed is greatest. That is why cuffs are placed on propeller blade shanks.

The jet engine eliminates propellers. It will not eliminate the inevitable effect of compressibility on wings, but since the breakdown of flows occurs on a propeller long before it does on wings, it enables the plane designer to realize the difference in speeds between the points where the propeller is affected and where the wing is affected. This difference may be about a hundred miles an hour for the immediate future.

Broadly speaking, the principle of the propeller and that of the jet engine are the same. Each gains its thrust by changing the momentum—which is the product of the mass of air handled multiplied by the change of velocity it experiences. The normal reciprocating motor develops its thrust through the means of a propeller creating a slip stream aft, while the jet propulsion motor develops its thrust through the medium of a nozzle which creates a slip stream, but one of much higher speed relative to the airplane than that made by the propeller. Actually, the jet propulsion motor developed by AAF and GE engineers on the Whittle design is quite a simple machine, being a gas turbine much like the turbo-supercharger. The difference is that while the turbo-supercharger uses waste exhaust gases from an internal combustion reciprocating engine to drive the turbine which drives the supercharger impeller, in the turbo-jet propulsion unit gases are not waste products but are deliberately created for the purpose of driving the turbo-compressor and then to be discharged through a tailpipe nozzle, giving the engine its thrust.

This is how it works: The unit is started by means of an external source of power which turns a turbo-compressor a few seconds. The compressor discharges air from its diffuser section into the combustion chambers. Fuel is injected into the chambers and ignited. The heated gases in the chambers, which are disposed circumferentially between the compressor and the turbine, expand and flow through the turbine to develop power to drive the compressor. The gases, still above atmospheric pressure, and hot, flow from the turbine into a tailpipe; then a final pressure drop takes place through a restriction—or nozzle—which greatly increases the velocity of the gases and thereby creates the momentum increase to develop the engine's propulsive thrust. Actually, then, it is the astonishingly simple restriction of the tail pipe to form the nozzle that represents the propulsive device that replaces the conventional propeller. It is an astounding fact that the simple process of squeezing down a piece of tailpipe which is called a nozzle represents the substitution of the normal propeller for creating thrust. The jet is smooth and continuous, and the motor is remarkably free from vibration inasmuch as there are only rotating parts.

The principles of the jet propulsion motor have been known for a long time, and there are hundreds of patents on various phases of the principles. It reached the point that you couldn't throw a whiskey bottle out of a hotel window at a meeting of aeronautical engineers without hitting some fellow who had ideas on jet propulsion. For years there have been discussions of the subject in scientific journals of all languages. For example a Frenchman, Rene Lorin, in 1913 proposed a jet propulsion motor, consisting simply of a duct and developing thrust from the cooling air by the so-called Meredith Effect as is done in liquid-cooled engine radiator installations on airplanes, which might have worked at near-sonic speeds but at anything below would have required fantastically high fuel consumption. In 1941 the Italians, who have had many "firsts" in aviation and science, but who never seem to follow through, flew a jet propelled plane dsigned by Secundo Campini from Rome to Milan at an average speed of 130 mph. The Campini unit had a reciprocating engine driving a compressor and thus lost the advantages of lightness and smoothness of operation which are features of the Whittle design. The principles of jet propulsion were known throughout the world and work in many countries was going on before war started. It is known that the Germans have done extensive work on the project.

A word about the thermodynamic efficiencies of jet propulsion motors may be in order. If it were not for the breakdown in propeller efficiency, it would be difficult to abandon the high thermodynamically efficient reciprocating engine as it shows up eventually in fuel consumption. The high thermodynamic efficiencies in the reciprocating engine are obtained by high compression (high temperature); firing is followed by the cooling effects of expansion in the chamber and then by the cooling intake charge, which with external cylinder cooling, make possible the use of high temperatures. In the 1920's, ancient times in terms of aeronautics, engineers thought that the gas turbine would not compete with the reciprocating engine because, being a continuous flow machine, the metals would limit the temperatures to relative low values and the thermodynamic efficiency also would be low. However, when we bring in the breakdown of the efficiency of propellers at high speed in combination with the efficient reciprocating engine, the jet propulsion engine, which improves in efficiency with increased forward speed, turns out to be the best over-all propulsive scheme for high speed as well as high altitude performance. (Continued on Page 64)

CENTRAL PACIFIC OFFENSIVE

COMBINED OPERATIONS

By Lieut. L. P. Bachmann

AIR FORCE STAFF CORRESPONDENT

EACH theatre of operations has its own peculiar problems. The great ones of the Central Pacific are tremendous distances and scarcity of bases. This is predominantly a Navy theatre. Here the AAF is the strategic air arm of the operations. Here the Navy's carrier-based planes are the tactical air arm, offering direct support to invading troops.

In the Central Pacific the broad plans of the Joint Chiefs of Staff are carried out by Admiral Nimitz who is the theatre commander. An example of operations in this theatre was the occupation of the Gilbert Islands. In this action as in subsequent engagements, all combat personnel and the operation of such personnel are under the command of Vice Admiral Spruance who is directly under Admiral Nimitz. Under Admiral Spruance are a number of task forces and their respective commanders.

One of Admiral Spruance's task force commanders is Rear Admiral Hoover, who, in addition, is COMAIRCENPAC—Commander of Air in the Central Pacific. Generally, task forces are fluid. They are organized for specific missions as the situation warrants. When a job is done the task force is dissolved with the separate elements returning to their original organization to prepare for the next engagement. Thus there is complete flexibility of power at all times and for any manner of mission.

Admiral Hoover's task force is unique in that it is permanent. It is augmented when large objectives are to be taken and diminished when such missions are accomplished. But the permanent task force's identity and operation continue.

One of the largest fixtures in Admiral Hoover's task force is the 7th Air Force. As COMAIRCENPAC, Admiral Hoover is in charge of all land-based aircraft in the Central Pacific theatre—Marine, Navy and AAF.

General Hale, commanding general of the 7th Air Force, is second in command to Admiral Hoover. They have headquarters together at an advance Pacific base where both men confer daily on plans and operations. They are joined in these conferences by General Merritt, the Marine commander.

From Hawaii, scene of the Jap air attack that plunged us into war, our 7th Air Force has moved forward to advance operating bases as the strategic air arm of a Central Pacific offensive which has as its ultimate goal the reconquering of the Philippines and the conquest of the heart of the Japanese empire.

The report on current operations of the 7th Air Force, which appears on these pages, was written or compiled by Lieut. Lawrence P. Bachmann, AIR FORCE staff correspondent in the Pacific.

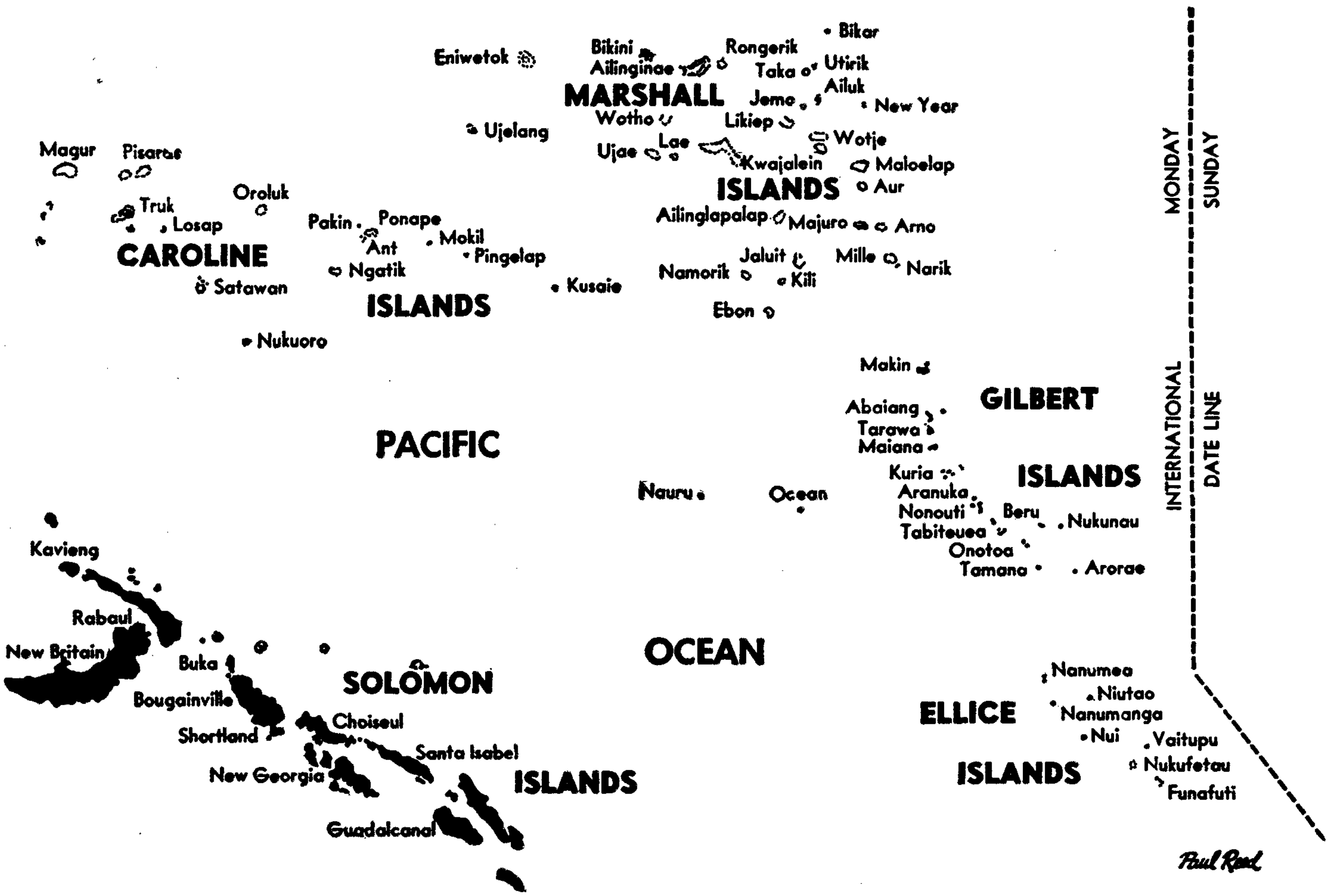
It is the function of the land-based planes—and because of the great distance involved at this time, that means the heavy bombers—to hammer the enemy's bases without let-up. In present operations a carrier force might be able to deliver heavier blows, but a carrier force could not stay and keep slugging. On the other hand land-based planes can, even though they are forced to fly great distances over water to do it.

The work of the 7th Air Force steps up when we move to take one or a group of islands. More and more missions are flown and heavier bomb loads are carried as they soften up the objective. It is obvious that enemy bases other than the planned invasion points cannot be neglected in the bombing attacks, since the enemy otherwise would know where the blow was coming. As D-day draws nearer, greater bombing power is turned on the objective. Heavy installations are pinpointed and knocked out. Photographs are continually taken for the task force commander and his staff to study in order to complete last-minute plans.

Bomber crews on these missions can see the task force assembling and gradually moving toward the objective. On the last few days before the assault, all available land-based bombers are thrown directly against the island. At that point it is too late for the enemy to get reinforcements or to repair damaged installations.

On D-day heavy bombers also fly diversionary missions against nearby enemy islands and nullify any aid which might otherwise be sent to the principal objective. Meanwhile, in the main action the

CENTRAL PACIFIC OFFENSIVE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SUNDAY
INTERNATIONAL
DATE LINE
Paul Reed

ships' guns lay down intense barrages and carrier-based dive bombers strafe and bomb installations which have not previously been knocked out. As landing boats start for shore, fighter planes give direct air support to the landing troops.

The action is swift and decisive because of the limited space on these coral atolls or volcanic rocks. We must either smother the enemy immediately or else we will be forced to withdraw and return some other time. There is neither the space nor the cover for establishing a beachhead and then digging in. For that reason the combined operation acts with the utmost dispatch in all branches of the service. As soon as the objective is taken, service personnel—they may be Marine, Army or Navy begin putting in our installations, enlarging the airfield, and evacuating the wounded.

The task force withdraws after leaving behind more than enough equipment and personnel to hold the base. The heavy bombers continue to fly striking missions to protect and cover the newly won base and to prepare for the next combined operation. As soon as a newly won airfield is in commission our bombers move in without a pause in their operations. ☆

THE 7th AIR FORCE

By Maj. Gen. Willis H. Hale

COMMANDING GENERAL, 7TH AIR FORCE

THE object of operations in this theatre is to clean an avenue across the Pacific so that a campaign can be carried right into Japan. In order to do this we must take certain strategically placed islands from which we can operate.

Due to the very nature of this theatre with its vast water distances, operations are predominantly naval, supported and augmented by land-based aviation. The Navy must land the assault and occupation forces of the Army and Marines. It must remain in protection of the newly occupied bases until runways and shore installations can be prepared for land-based aircraft. Yet there is a very definite need and function for land-based planes since they have a greater range and can pack a heavy load. And as we move across the Pacific, consolidating our gains, turning the newly won islands to our use, there will be greater air force activity. But this will remain a Navy theatre at least until we begin land operations against the Philippines and Japan itself. The day is not too far off. Meanwhile, we aid the Navy in its extensive activities and gradually step up our own efforts.

After the first shock of the Jap attack two years ago, the immediate reaction was to throw everything into the defense of Hawaii. All the resources of the mainland were rushed to us and we braced for the assault. Ground defenses dug in. Our fighters and bombers were marshaled for air defense.

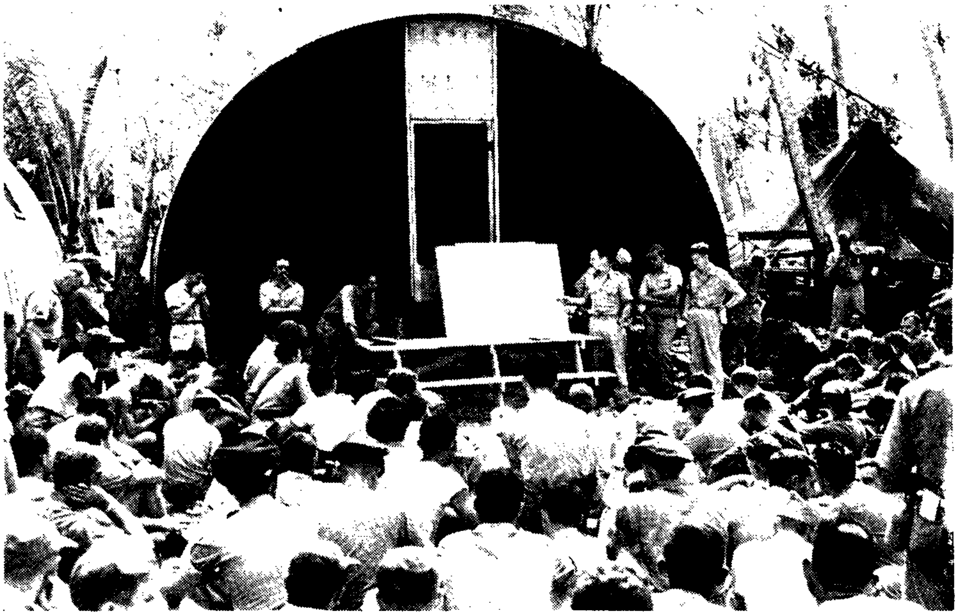
The islands being situated as they are, the pattern of defense as far as aircraft were concerned consisted principally of search missions with our alert forces always prepared to strike. These search missions marked the beginning of the 7th Air Force. Daily missions were flown covering the area around the islands for a radius of over 800 miles. This meant flights of more than 1800 miles, because a plane does not fly straight out and straight back; it flies a zigzag pattern in its search sector.

Our search missions stressed the obvious value of training men in over-water flights, with the direct result that the navigator became the key man of a bomber crew. The navigator's training as well as the pilot's was stepped up. We realized, however, that these search missions did not provide complete training. Although it is difficult to fly over nothing but water for 800 miles and return to base, there is still plenty of margin for error on the part of the navigator and pilot in this area. Once the plane hits any one of the numerous islands of the Hawaiian group, it is a simple matter to figure out where the plane is and to head for the home field. But we knew that the type of flying our men would be called upon to do would not permit such leeway. For that reason we started making round-trip flights to Johnston Island.

General Hale, author of the accompanying article, speaks as a bomber pilot as well as a commanding general. He has participated in a number of important missions, usually first ones against new objectives. He was at the controls of one of the bombers dispatched to Midway for the all-important defensive battle against the Jap battle fleet. On the first raid over Tarawa, General Hale flew the lead plane, and his was the first land-based bomber to show the Japs the shape of things to come in the Gilbert Islands.

Johnston Island is a typical small coral atoll some 714 nautical miles from Oahu. There are no other landmarks around Johnston. You either hit it or you don't, and the results are very tangible. In order that the men would get complete training we sent them down in the daytime and had them fly their return at night. Thus we trained our over-water flyers the practical way.

The thrust into the Solomon Islands directly diminished the threat to Hawaii. We were loaded with personnel who had been in extensive final phase training of the defensive type. Men and equipment were needed down below so we immediately sent combat units and individuals to the South Pacific. We also set up modification centers to improve the aircraft for the special type of missions they had to fly. This job was handled by the Hawaiian Air Depot.


Hardly a sound but the voice of the speaker disturbs the stillness of this advance post as the briefing officer outlines the next job to be done.

We were able at this point to swing from defense to offense. We augmented the search missions with raids. To strike at the Jap we flew incredible distances over water.

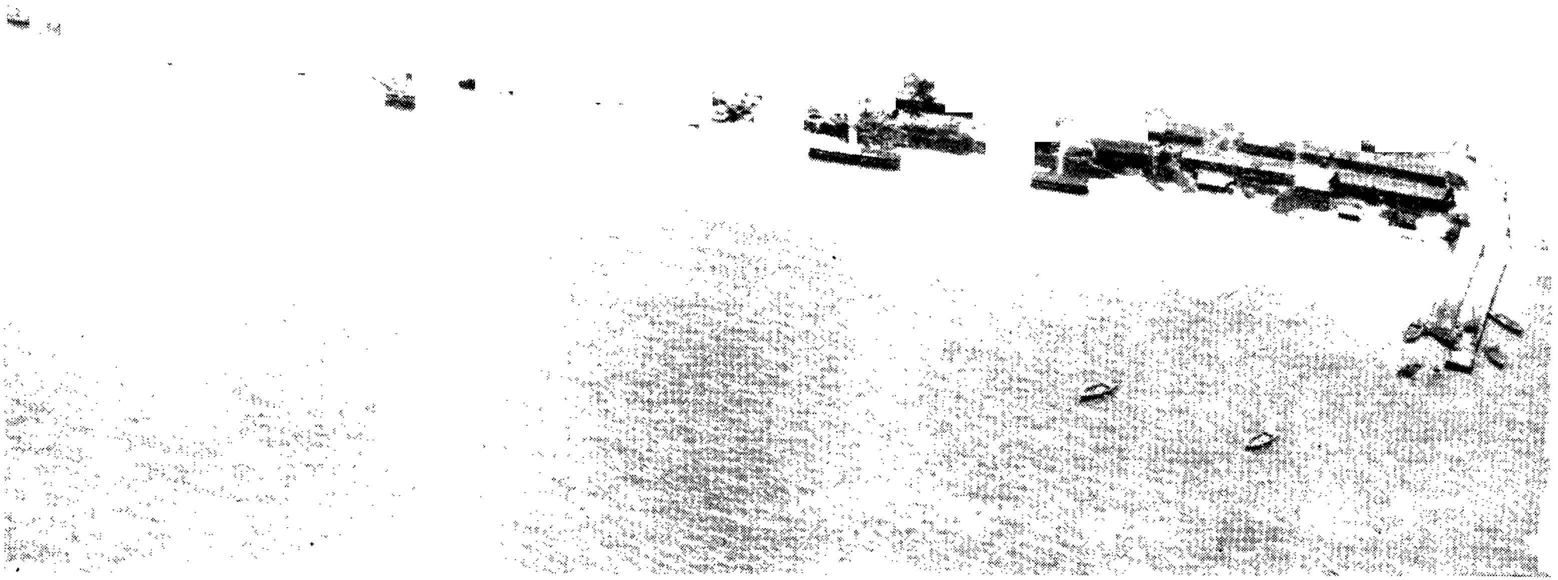
Our squadrons bombed Wake and returned to base. We flew bombers to southern bases and from there struck for the first time at Tarawa. In addition to damage inflicted on the enemy, these raids set records in distances for missions over water and—more important—they gave us experience.

July, 1943, marked the end of the defensive phase of our operations. Plans for the Central Pacific offensive were revealed to us. No longer would we fly from static defense positions in Hawaii, with occasional raids from our scattered bases. We prepared to take our bombers to bases hundreds and even thousands of miles away where we could close with the enemy and drive him back.

Admiral Nimitz gathered together one of the greatest task forces the world has ever seen and we were the land-based aviation arm. We were ready to move with the force. However, even though we were now changed to a striking force, Hawaii still had to be protected from the air. This protection remains one of the functions of the 7th Air Force.

At the outset, some thought was given to divorcing its units moving to remote bases and leaving the 7th as a purely de-

Palm fronds, nature's plentiful camouflage, are brushed aside while bombs are loaded onto the carrier which will take them to the waiting planes.



Mille Atoll, closed to the outside world by Japs in 1935, is a typical target of the 7th Air Force. It has been bombed repeatedly since we began our raids on the Marshalls. Mille is triangular, about two miles from

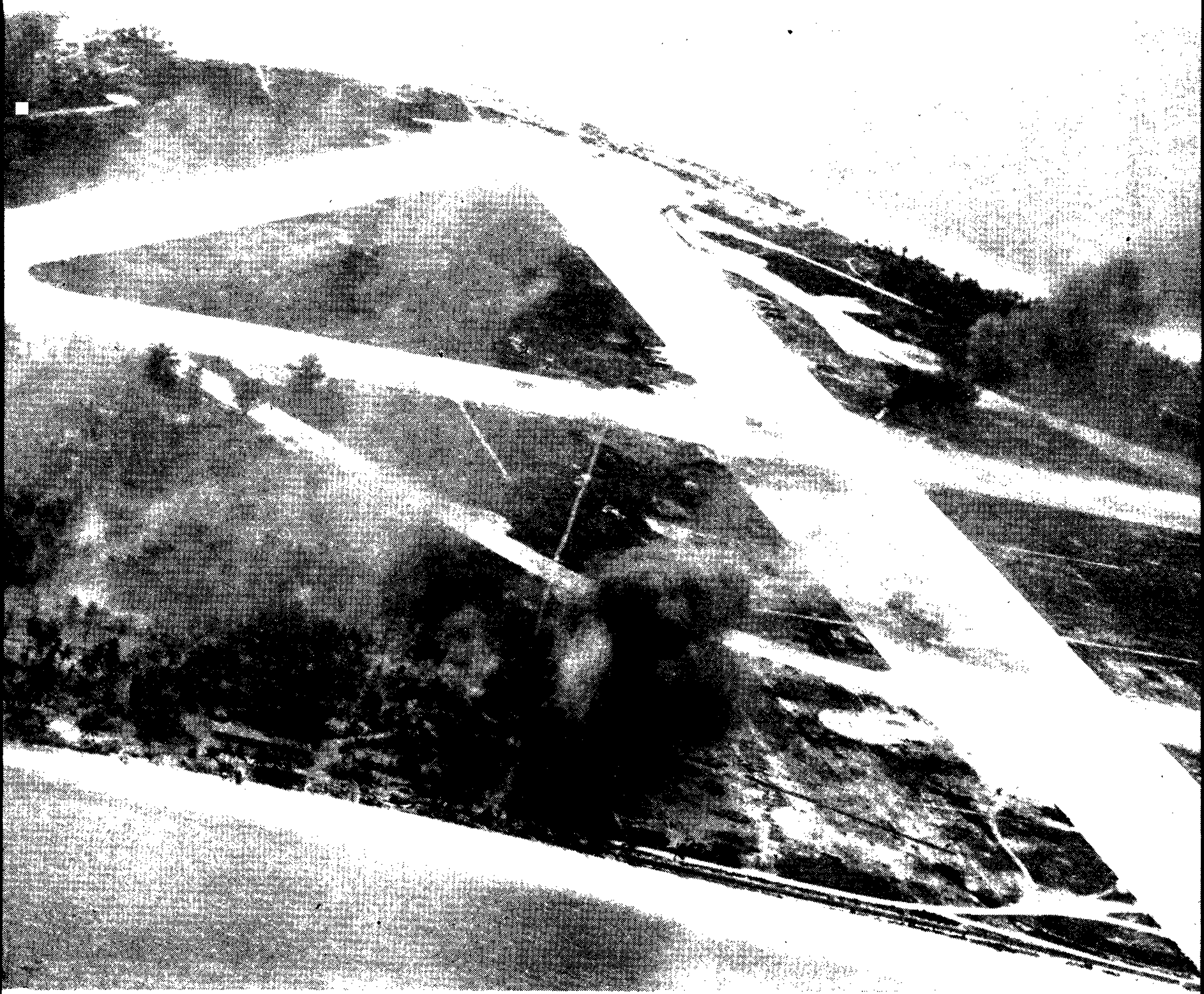
fensive arm while we formulated a new air force as the striking arm of land-based planes in the task force. But recent action has shown the advisability of retaining the 7th as a unified organization. Requirements in the field are too numerous and too great. We need home bases to fall back on both for supplies and to fill increasing demands for new personnel highly trained in our peculiar type of operations. Another advantage in maintaining the unit is that any possibility of friction or delay is eliminated. As it stands, the organization is under a single command. If anything is needed, I have only to consult my staff and arrive at a decision.

The results of our first joint major operation are known. The Gilbert Islands are in Allied control. We have moved up to operate from Gilbert's bases. The operation marked the first step in a very long campaign.

In this area the bases, whether ours or the Jap's, are either coral atolls or volcanic islands. In either case there is very little space to construct long runways and large installations.

In our long range operations it is obvious that we can not have fighter cover. On the other hand, by flying over these vast expanses of ocean we do not meet a great deal of enemy interception or anti-aircraft fire until we are over the target. To make up for the lack of fighter cover we have concentrated on gunnery skill. All of our crew members have gone through an intensive gunnery course at a school which was set up some time ago.

One of the principal differences in operations here and in any other theatre lies in the fact that we are encountering enemy bases and installations about which nothing is known. Some of these bases have not been seen since 1920 when the Japs acquired them and immediately cleared them of everyone except a few missionaries, and the majority of the bases have not been seen or photographed since



base to apex. This picture was made during an effective raid by heavy bombers and bombs are seen exploding in the camp area. When closed to visitors, Mille had a population of 515 natives and four Japs.

1935 when Japan withdrew from the League of Nations.

Most of these islands have absolutely no economic value to the Japs. They are not like Java, Sumatra and other rich island territories occupied by the enemy. We have to get much closer to Japan before the islands start having economic value. Those we are now moving against are purely military outposts which the enemy has prepared for military purposes.

Our great problem has been to get information—even photographic information—on these islands, and the capture of enemy bases has revealed why our photographs do not show the full enemy strength. The Jap has concealed himself by extremely heavy overhead camouflage. In doing so, however, he has limited his overhead anti-aircraft guns, and this has given our planes a chance to come in lower to knock out the enemy's permanent installations. Moreover, in digging themselves into strong defensive positions, the Japs have pinned themselves down with absolutely no mobility.

Living on any of these islands, whether originally occupied by us or taken from the enemy, is difficult and the conditions differ from those found anywhere else in the world. Often the atolls are so barren that even the natives, who are famed for living on practically nothing, shun them. Our men live on field rations with a minimum amount of drinking water. These bases are highly vulnerable to aerial attack because of the lack of room. There is no place for dispersal. There is just room enough for fox-holes and in some instances the water level is so near the surface they can't be dug too deep. It is a major feat and a tribute to the engineers that they manage to find locations for runways.

There is no such thing as area bombing in this theatre. We must pin-point our targets for the simple reason that the targets are small and *(Continued on page 54)*

By Col. John R. (Killer) Kane

Former CO of a Heavy Bomber Group in the Mediterranean Theatre

We're beating the Nazis but their airmen still think they are going to win. Overconfidence on our part can work to their advantage.

GERMAN airmen still think they are going to win this war. And we'll do them a big favor if we permit ourselves to get overconfident.

The "easy victory" boys who think the war is all but over never had their formations shot full of holes, their men knocked out of the sky, or their missions ruined by the highly skilled attacks of a cunning and powerful enemy.

I fought the Germans all across Africa, in Sicily, Italy and in the skies over occupied Europe, and I warn you that we are still a long, long way from victory. We will beat the Germans—there is no doubt of that—but the bitterest and bloodiest air battles of this war are still to be fought—battles that will make Schweinfurt and Regensburg and Ploesti look like peace-time picnics.

The Jerries today are flying better airplanes than ever before—planes with more powerful armament, improved ammunition and more efficient engines which can deliver more speed and can climb to higher altitudes. They are concentrating most of their production on fighter aircraft and the machines they are now turning out are more than just formidable foes; they are deadly airplanes, and it takes all we've got to knock them down.

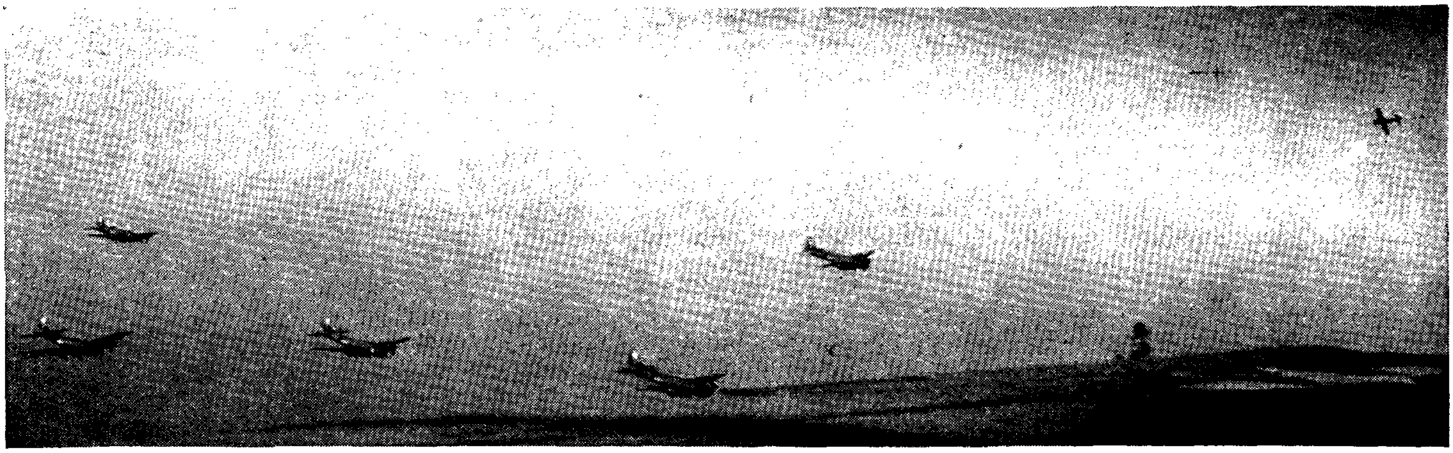
Their pilots, rather than deteriorating, have improved. It is true they have lost most of their old first line flyers and that the pilots who have replaced them are just kids. But these youngsters are products of the Hitler Youth Movement—fanatical Nazis who are completely sold on der Fuehrer and the Fatherland. Take a German kid, warm him over with goose-stepping and heel-clicking, add Prussian discipline, feed him for six years with "master race" propaganda, and you have a fighting man who is not afraid to die. The new Nazi pilots are as aggressive and dangerous as the veterans of a year ago.

The German airmen are now defending their own homeland—and that has brought even more fanaticism to their fighting. Previously, they seemed eager to enjoy the role of conqueror against defenseless countries; now they see their own cities blasted by the Allies' bombers, and they are striking back with a sense of revenge which borders on savagery.

Our own men are doing a great job, but it stands to reason that we would be fighting a more desperate battle if Washington and Chicago and Dallas were being leveled by German bombers. A people defending their own homeland have a distinct morale advantage over the attackers. The Jerries are fighting harder now than they ever did before.

German soldiers from the top ranking officers down are military robots. They believe what the high command and the propaganda boys want them to believe. And virtually every one of them is still sold on Nazism and the fact that Germany eventually will be victorious. They have

An FW-190 (arrow) moves in on a bomber formation from 10 o'clock.



had drummed into them the belief that one day soon the Germans will start a big offensive which will defeat all their enemies at once. You can laugh at that if you like, but the Germans believe it and it makes them fight harder because they still feel they are on the winning side. German soldiers believe our east coast has been destroyed by Nazi bombers. Upon seeing New York, Nazi prisoners remark that we have done a good job of rebuilding it after the bombing raids.

THE Jerries are going to get tougher. As they are pushed back closer and closer to Germany itself, our battle will become more difficult. Their lines of communication will be shorter, and that advantage cannot be overestimated. One of the reasons of the failure of the Luftwaffe in Africa—and also for the defeat of the German ground forces—was their inability to get sufficient supplies to keep their planes in the air. This will not be the case when they are working out of Germany itself. Then the difficulties of supply will be ours.

It is undeniably true that the Allied air forces have wrought incredible damage on Germany. But the Nazis have demonstrated their ability to put their cities back in working order. Many of the manufacturing centers which have been bombed out are once again in production—perhaps not at full strength but turning out enough material to cause us plenty of trouble. German engineering ability has never been doubted.

Remember that you are fighting an enemy who not only doesn't believe he is licked, but actually feels he is going to win the war. Indications of that belief are obvious to everyone who has ever fought the Germans. You have probably heard stories about a lack of enthusiasm on the part of Nazi pilots—of unwillingness to fight, particularly when outnumbered. Don't believe a word of it. I know of many cases where formations of thirty to forty B-24s have been attacked by only five or six enemy fighters—and I mean attacked. Those Jerries just didn't play around outside the formation. Probably they knew they were going to get shot down, but they came in, raked our planes, dove away and came up again for more.

Flak gets heavier and heavier.

A B-17 goes down in flames over Paris, hit by flak.

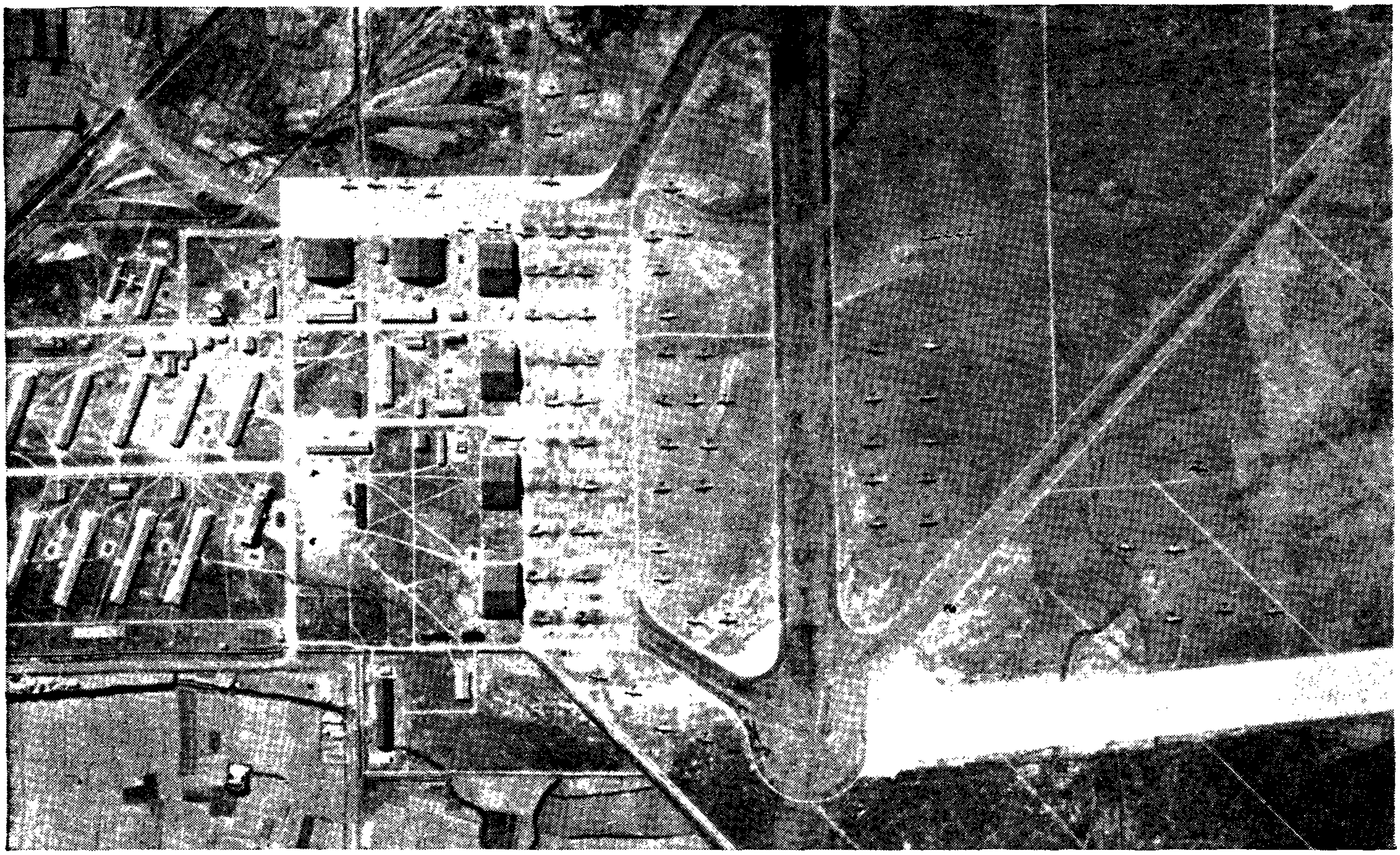
Even when a single German ship finds a strong Allied formation, he will rarely run away. He'll hang around making passes, trying to knock one of our ships out of the formation so he can jump on him. Then he'll start to work on a second plane. I found that to be true from El Alamein to Italy. And it will get worse.

When the Germans send a formation of bombers over London at night, they know full well that those planes will run into probably the strongest defensive setup in the world—intense flak and plenty of heavily armed fighters. Yet their bombers continue to come over just to see what's going on, to try to break up any preparations and, generally, to create as much damage as they can. The few bombers Germany has are highly important to her. They realize there is little chance of the entire formation getting back against the British defenses—yet they still send them over. Does that sound like an enemy who is unwilling to fight?

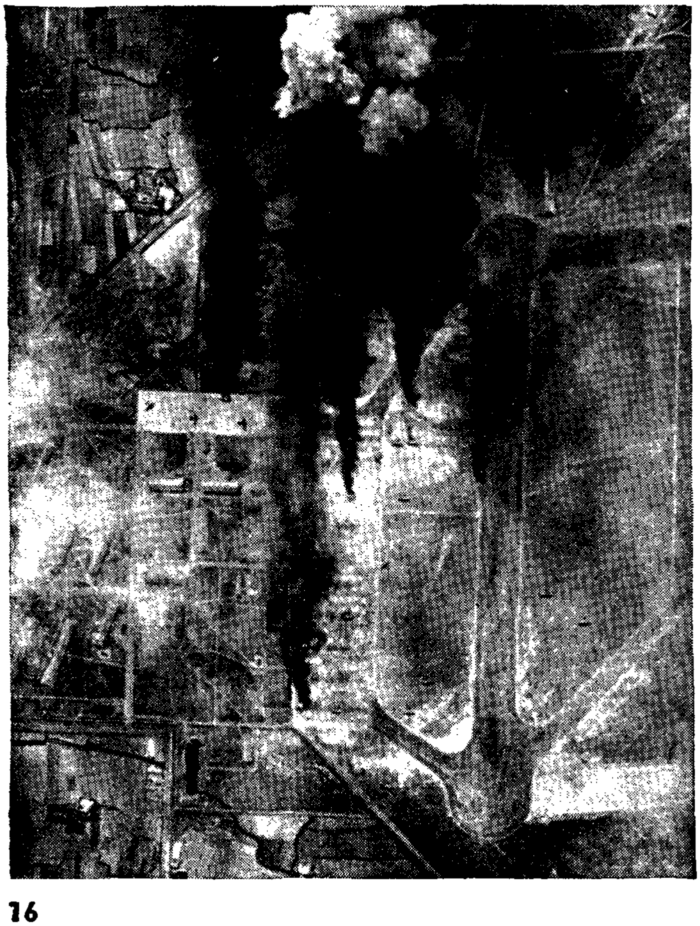
The Jerries guess wrong sometimes but you can usually count on a strong fighter force waiting to meet you. On most of our operations we found fighter opposition before we got to the target, while we were over the target, and long after we left the target. We can rely on the fact that the Jerries will chase us until they are out of ammunition and gas, then refuel and rearm, and come after us again.

The Germans will fight in the air until they are down to their last bullet and last gallon of gasoline. And they will be licked only by the sheer weight of our aircraft knocking them out of the air and destroying them on the ground—and not by our *wishing* they will fall. We're going to beat them, and beat them badly, but it is going to take a lot of high-powered fighting and close coordination to do it. Remember, the Jerries are not afraid of us. ☆

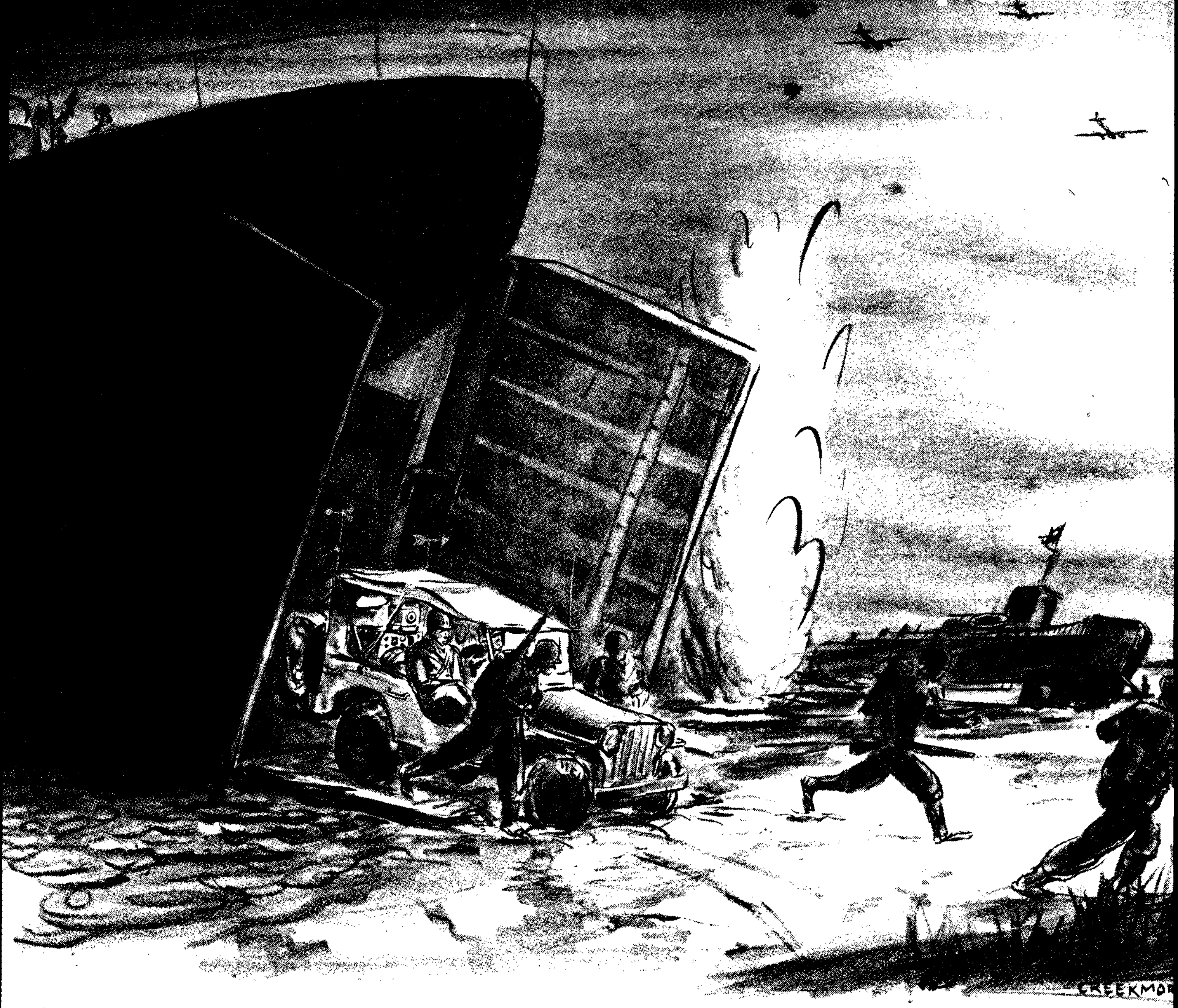
A VISIT TO FORMOSA . . .



A reconnaissance pilot brought back the above photo—81 Jap planes just asking for it. A portion of what they got is shown below.



On Thanksgiving eve a reconnaissance pilot in China brought back information that 81 Jap planes were parked on Shinchiku airdrome, Formosa. The following morning eight P-38s, seven P-51s and fourteen B-25s, six of the latter flown by members of the Chinese-American Composite Wing, took off to pay Shinchiku a surprise visit. Flying tight formation as they crossed the Formosa Strait, the planes skimmed along barely twenty feet above the water to avoid detection by Jap locators, but on reaching the Formosa coast they climbed to 1,000 with the Lightnings on the lookout. Near the target the Allied visitors found fifteen to twenty enemy planes carrying out routine flights at various altitudes, obviously unwarned. The P-38s knocked down six bombers, seven fighters, one Stuka and one transport, then poured 400 rounds of 20 mm and 4,000 rounds of .50 caliber ammunition into the parked Jap aircraft. The B-25s dropped fragmentation clusters from 1,000 feet, then strafed with 1,000 rounds. Meanwhile, the P-51s took care of other parts of the airdrome with 3,000 rounds. Twenty-five bombers, one fighter and a transport were blasted on the ground. We suffered no losses of personnel or equipment. Three B-25s were slightly damaged by small arms fire. ☆



At noon, we attempted a landing in the face of strong dive-bombing attacks.

HELL-BENT FOR WEATHER

By Capt. Howard J. Simpson

UNIT WEATHER OFFICER IN ITALY

SOOZIE came to us at Maison Blanche Airdrome, Algiers, on June 15, 1943. She wasn't much to look at with her low-slung build and liverish complexion, but she has been sturdy, uncomplaining and completely devoted to us. Jeeps look a lot alike, but they all have their own personalities and Soozie certainly has hers.

On the day after her arrival Soozie underwent a strip act. We peeled her down to the bare essentials because this little jeep had to carry us through the invasion of Sicily and later, although we didn't know it at the time, along the battle lines in Italy. Our jeep had to have mobility not only to save our skins in an emergency but to take us around in a hurry so we could maintain the fastest possible weather service for the benefit of our fighting air and ground forces. Like an adagio dancer, Soozie required freedom of movement.

After stripping Soozie down, we had the job of dolling her up again. We installed a Signal Corps radio unit, a small, semi-portable outfit with medium range. We also fixed Soozie up with an aneroid

Mobile Weather Unit No. 7 and a jeep named Soozie moved into the front lines in Sicily and Italy to perform a vital service for Allied air and ground forces.

barometer, hand anemometer, compass, four psychometric tables and thermometers, two portable typewriters, field desk and pyramidal tent for office use. Thus, Soozie became a mechanized weather station—officially, Mobile Unit No. 7.

Soozie and all hands boarded USN Landing Ship Tank (LST) No. 311 at Algiers on June 21. We were at sea with a warm salt breeze blowing in our teeth the next morning. Our objective was to establish a beachhead five miles east of Gela, Sicily, and the weather unit's aim was to set up for business at Ponte Olivo Airdrome. This field was about five miles north northeast of Gela.

JULY 10 was Invasion day. As LST 311 bounced in the sea chop, we hoped the involuntary evasive action would make us a tough target for the shore batteries which had opened up on us. At noon we attempted a landing in the face of strong dive-bombing attacks. We weren't hit, but our two companion ships to port and starboard didn't fare so well.

LST 312 ran aground and became a helpless punching bag for enemy artillery during the rest of the day. LST 313 caught a bomb squarely amidships and beached about 25 yards from us. That bomb exploded on the tank deck and touched off the ammunition. But in a few minutes our skipper had rammed the bow of our ship into the stern of the stricken LST 313 and we were able to evacuate many of the crew. Sergeants Graham and Nuhn helped carry wounded and near-drowned men to safety.

At dawn the next day we were at the landing again, unloading our ship while a dozen JU-88s rained heavy bombs down on us. Two ships were hit. Our outfit made for the beach.

Using our helmets, we dug slit trenches for all we were worth. Mobile Unit No. 7 of the U. S. Army Air Forces Weather Service now held a few square yards of Sicily, a little sandy hollow just a quarter of a mile from the water's edge. We clung to our position while a steady parade of enemy fighters came over and machine-gunned our beach.

July 12 was another rugged day. We huddled in our slit trenches while wave after wave of enemy planes roared overhead, dive-bombing and spraying the beach with machine gun bullets. Enemy artillery opened up and the hits were uncomfortably close. We learned, too, that enemy tanks were not far off and were boring in.

Just about the time we were getting pretty punchy, we saw our own paratroops and airborne infantry flying over. It was a heartening sight. Two enemy planes crashed a short distance down the beach from us and we watched bright orange flames lick them up. And in the meantime our heavier guns and tanks were being unloaded on the beach and our forces hoped to take the airdrome by nightfall.

Ponte Olivo was captured, and Soozie carried us to the field on July 13. We were housed in the same building used as headquarters by the commanding officer of the fighter group to which we were attached. Enemy planes bombed the field that night, mostly anti-personnel bombs of the delayed action type. Luckily, their aim was not too good.

We started operating the station the day after our forces took the airdrome. The boys began making observations. Our power generator unit had been doused in sea water during the beaching and had to be completely overhauled. Still we were able to get going somehow and establish contact with the radio weather net in Africa.

That was important because now we could get some reports on the trend of the weather in other parts of the Mediterranean area. It gave us some basis for forecasting. Within a few days Mobile Unit No. 7 was servicing several fields in the vicinity.

CAPTAIN SIMPSON'S *story is a graphic play-by-play description of the battle role weather men are performing. AAF weather officers and enlisted men are scattered all over the world, wherever American troops are operating and in many bleak lonely outposts where they aren't. Furnishing valuable information to the Ground and Service Forces as well as the Air Forces, weather men have been in the thick of the fight from the war's beginning. Five of the weather personnel in Hawaii, on their way to duty, were killed by a 500-pound bomb when the Japs attacked Pearl Harbor. A weather officer was drowned in the surf when his landing craft capsized off North Africa. Weather installations are located alongside fighter and bomber strips so the weather man gets it in the neck from enemy bombing and strafing just as much as the next fellow. Captain Simpson and Sergeants Nuhn and Graham will be decorated with the Silver Star for bravery, according to the commanding general of the Air Service Command—PRO, AAF Weather Wing, Asheville, N. C.*

Among the units receiving our forecasts and 24-hourly observations by now, (July 22) were: photo reconnaissance squadron and troop carrier command at Ponte Olivo field, a fighter bomb group at Gela East, a fighter bomb group and reconnaissance squadron at Gela West, and advanced headquarters of an air support command and air defense wing at the city of Gela.

Late in July our faithful Soozie got a new load of equipment to carry—pilot balloon apparatus, instrument shelter, anemometer and two radio units, one a wide range receiver and the other a powerful unit for both transmission and reception. The latter, lent to us by the Signal Corps, lacked some parts. Sergeants Bertram and McGee scoured the area and obtained the parts we needed to get it working. Our own weather men, of course, were handling the sending and receiving.

I can't minimize the importance of this wider range because now we could really fill in our synoptic map and find out what was cooking in a weather way for our neighborhood. Not only were we able to furnish forecasts twice daily, but we got together spot forecasts every time a fighter or bombing group prepared for a strike. Incidentally, on their return the pilots reported to us the conditions en route and over the target. Our forecasts panned out pretty well.

In about mid-August, I began to hear plans for the invasion of Italy. When Col. Joseph A. Miller, Jr., regional control officer of the 12th Weather Region, landed at Ponte Olivo in his P-38, we learned that Soozie and her crew weren't going to be left behind in the coming invasion.

While we were waiting, Soozie carted Major Wetterer, Lieutenant Moncada and me around to American, British and Italian airfields and meteorological stations. We obtained valuable climatological data from the headquarters of the Italian Weather Service at Syracuse. This is vital information for planning operations in advance and our forces drew heavily on it.

SOOZIE and her accouterments were turned and polished up before we left for the Milazzo West Airdrome with a fighter group, Major Wetterer and Lieutenant Moncada accompanying us. During the second week of September, while our first assault forces were making steady progress along the toe of Italy proper, we did a lot of loafing and swimming. But we were ready whenever our time came. Our time was the battle of Salerno.

On September 13 a C-47 picked up the complete personnel of our unit, including Soozie, bristling like a Christmas tree with all our instruments. We were off for the Salerno beach-head where the hardest fighting of the campaign was underway.

Our trip was fairly uneventful except that a P-40, escorting us on our port side, was shot down. When we arrived at Paestum field, the scene that met our eyes was one of dust and utter confusion. Three landing accidents had just occurred a few minutes apart and the wrecks were still littering the runways. The moment we got down two fighters taxied into each other like two small fluttering birds blinded by the dust.

Paestum field, outside the ancient town of that name, was located in the southern sector of the Salerno beach-head. To the north of us, about five or ten miles, were the front lines. Those lines were so fluid and shifting, that Mobile Unit No. 7 had to be in readiness for immediate evacuation. However, we cruised around in Soozie looking for a place to roost. We ran across a brick building about a mile from the field and we decided to commandeer it. We began to move in our equipment.

Meanwhile, some of the allied forward units were being withdrawn from the front. When they began to stream past us, we took off in Soozie, evacuating the personnel and secret material to a point three miles south for the night. Major Wetterer and I returned to the building, determined to destroy the equipment if our position worsened.

At dawn the following day, our personnel came back to the station. It wasn't long before the boys had the radio going and we made contact with the weather net. Our operations were necessarily limited that day because of enemy activity. Shells plumped nearby, and when tanks broke through a valley two miles to the northeast, Soozie had to get us the hell out of there in a hurry. At nightfall the major and I, along with Sergeant Graham, went back to guard our building. By the next day our forces had begun to make local gains so we decided to move everything back in.

We began making forecasts on September 15. Within a few days we were distributing forecasts to a dozen units in the vicinity, including the ground forces of Lieut. Gen. Mark Clark's Fifth Army, air support, fighter and fighter bomber outfits, barrage balloon units and an observation squadron. Telephone communication was established with three local airfields and a "weather only" direct line was run to the fighter group at Paestum Airdrome.

In addition to spot forecasts, we prepared a detailed summary of climatological data for the months of October, November, December, January, February and March. It covered the area west and east of the Appenines. I issued this data to all the units which we were serving.

WITH things quieting down somewhat, several of us toured airfields and picked over the ruins of five Italian weather stations which had been destroyed along with practically everything else by the efficient demolition crews of the retreating German army.

One thing that we were able to salvage for the weather service was a beached motor launch formerly used by the Germans at a seaplane base. With the help of two co-operative Italian mechanics, we managed to make the boat shipshape and float her in the water. We christened our squadron launch Soozie Too.

Soozie Too could take us to islands off the coast where the original Soozie couldn't go.

Personnel of Mobile Weather Unit No. 7 which participated in the invasion of Sicily and furnished weather service at Paestum Airdrome in the Salerno sector of Italy during the heavy fighting there included:

Capt. Howard J. Simpson, unit weather officer.

Master Sgt. William K. Slate, station chief and forecaster.

Tech. Sgt. Leslie C. Nuhn, forecaster.

Staff Sgt. Albert T. Bertram, radio operator and weather observer.

Staff Sgt. Arthur L. McGee, radio operator and observer.

Staff Sgt. James F. Graham, observer and student forecaster.

Staff Sgt. David W. Fogo, observer.

Sgt. Alfred W. Hunt, observer.

Sgt. Clifford H. Wolf, observer.

Maj. C. S. Wetterer, sub-regional control weather officer, and his assistant, Lieut. V. V. J. Moncada, accompanied the unit on the landing at Paestum Airdrome.

However, we didn't forget Soozie. She was washed and given a new paint job; a new armature was installed in her generator, and her distributor got a new set of points. A new transmission was installed and Soozie was as sturdy as ever.

We've kept on moving, Mobile Unit No. 7, Soozie by land and Soozie Too by sea, getting out the weather reports needed for the fighting. Fairly soon, we trust, we'll be getting first hand recordings of the temperature in Germany. ☆

What's Your AIR FORCE I.Q.?

Although you are given only eighteen rounds of ammunition in this month's AIR FORCE Quiz, instead of the usual twenty, chalk up the customary five points for each question answered correctly. On that basis a score of 90 is perfect; 70 to 80, very good; 60 to 70, not too bad; below 50, tsk, tsk. Answers on Page 64.

1. Formosa is located
  a. East of Japan
  b. Northeast of New Guinea
  c. Due West of the Philippines
  d. North of the Philippines

2. When personnel of the Troop Carrier Command refer to "DZ" they mean
  a. Don't zigzag *b. Direct zenith*
  c. Deployed zeros *d. Drop zone*

3. Cavitation refers to
  a. The vacuum caused by whirling propeller blades
  b. The name popularly given to defensive action taken by forces on Cavite
  c. The expression used in describing the forward falling motion of bombs
  d. An aerial maneuver resulting from hard left rudder

4. The wingspan of the P-47 is
  a. 39 feet *b. 46 feet*
  c. 41 feet *d. 37 feet*

5. Ellington Field is located near
  a. Atlanta, Ga.
  b. Panama City, Fla.
  c. Houston, Texas
  d. Shreveport, La.

6. The commanding general of the 15th Air Force is
  a. Maj. Gen. James H. Doolittle
  b. Maj. Gen. Howard Davidson
  c. Maj. Gen. Nathan Twining
  d. Lieut. Gen. George C. Kenney

7. H plus 10 refers to
  a. Enemy installations located ten miles past your home field
  b. Ten minutes after your estimated time of arrival
  c. Ten hours required to complete a mission
  d. Ten minutes after the hour set for an attack.

8. Most of the noise from the average airplane comes from its engine.
  a. True *b. False*

9. "Flying the hump" usually refers to
  a. The North Atlantic crossing
  b. Riding a P-38 piggyback
  c. An air route between India and China
  d. Carrying supplies to Alaska

10. The name popularly given to the C-69 is the
  a. Constellation *b. Commando*
  c. Skytrain *d. Caravan*

11. The dress uniform of a US Navy aviator is
  a. blue *b. green*
  c. grey *d. khaki*

12. Which of the following colors appear on the Good Conduct Ribbon?
  a. Yellow *b. White*
  c. Red *d. Blue*

13. A renversement is
  a. An instrument used by a bombardier
  b. A maneuver in flight
  c. Part of a radio compass
  d. Part of the horizontal stabilizer

14. When reporting to a superior, an Officer Candidate named Jones refers to himself as
  a. Mister Jones
  b. Private Jones
  c. Officer Candidate Jones
  d. Jones

15. To control bleeding on the scalp above the ear, light pressure is applied
  a. Above the ear
  b. Below the ear
  c. In front of the middle of the ear
  d. Behind the ear

16. AP bombs refer to
  a. All purpose bombs
  b. Anti-personnel bombs
  c. Altitude pressurized bombs
  d. Attack power bombs

17. Rabaul is located on
  a. New Britain *b. New Ireland*
  c. Bougainville *d. New Guinea*

18. The Capital of India is
  a. Calcutta *b. Bombay*
  c. New Delhi *d. Karachi*

The silence is broken only by the grind of the projector. Officers lean forward in their chairs, eagerly watching the airplane formation shown on the screen. Now and then, one scribbles on a note pad: "too much interval on right turn" or "formation too tight" or "left element slow."

It is a serious business. Lives can be saved or spent by the calculations being made in this projection room. The Army Air Forces Board is at work.

The film is a kind of laboratory record of a new bomber formation which has been developed by the board and its staff of experts. A test run has been made over the Gulf of Mexico and the results photographed. With this and other evidence, the board weighs the results.

In theatres of operations everywhere, bombardment commanders have learned that in operations against a cunning and resourceful enemy, formations must be changed frequently. The continued use of standard formations, which the enemy soon comes to know and expect, would result in complete neutralization of our bombing missions.

The AAF Board, operating with the Tactical Center at Orlando, Fla., is the Commanding General's laboratory group for tactical research and experimentation. This matter of new and improved bomber formations is typical of the problems referred to the board by the Commanding General. The way the board proceeds on the quest for new formations tells the story of the operations and functions of the agency. The formation obviously must combine maximum firepower with maneuverability. Using these elements as goals, the board and its staff make analyses of combat reports to determine the most effective formations so far used in the various theatres. Borrowing from this experience and all other available sources of information, the board reduces a plan to writing.

Now comes the test. Missions are flown, with P-47s and P-38s providing fighter "opposition" and simulating as closely as possible the tactics that might be expected from enemy fighters. The attacks and the effectiveness of the various defensive formations are recorded on film by gun cameras. In addition, two photographic planes fly close to the formation to shoot stills and motion pictures.

At the conclusion of the mission, the photographs are developed while the board interrogates bomber and fighter personnel. Thus, the board is able not only to perfect the size of a model tactical defensive "box" but also to prescribe the distances between elements and the best methods of changing positions one with another for defensive advantage.

All this data is integrated into tactical doctrine which ultimately is distributed to the training air forces and the combat theatres. The job has been done as effectively as tactical units could do it in actual combat, where a single error in calculations might cause a major disaster.

Take another case.

In central Italy a fighter pilot returns from a high altitude operational mission of two hours. The enemy hasn't scratched him, but when he removes his oxygen mask, there is a deep red mark from one cheek to the other and across the bridge of the nose, where the mask has chafed and rubbed the skin. This pilot's mask has been improperly fitted and its rough edges have caused severe irritation. Here is the danger line where a sizable leak may cause death. The mask must fit securely and snugly, and must not cause discomfort even when worn for a long time.

A call for help goes back to the States, and AAF Headquarters issues a test directive to the Air Forces Board. The question is subjected to experimentation. The mask is worn by fighter pilots on flights lacking only enemy bullets to make them real combat missions. On the basis of these tests the board makes recommendations, and the combat pilot gets a safer, more comfortable mask.

The Air Forces Board has operated for several years in various locations. Its organization was overhauled recently to adapt its operation to rapidly changing war conditions.

The executive director, Brig. Gen. Eugene L. Eubank, is the active head of the board, and is appointed by the

Commanding General of the Army Air Forces. Ex-officio members are Brig. Gen. H. A. Craig, Assistant Chief of Air Staff, Operations, Commitments, and Requirements; Brig. Gen. Hume Peabody, commanding general, of the AAF Tactical Center, and Brig. Gen. Grandison Gardiner, commanding general, of the AAF Proving Ground Command, Eglin Field, Fla. The board utilizes the personnel and facilities of the Tactical Center and the Proving Ground Command to conduct tests which precede its decisions and recommendations.

The Tactical Center embodies the School of Applied Tactics, a tactical air force, a strategic air force and other functioning subdivisions. It supplies men and materiel for employment by the board in conducting its projects.

The Proving Ground Command conducts tests, special studies and investigations of aircraft and equipment in accordance with directives of the Board as a basis for determining operational suitability of individual aircraft and items of equipment, developing improved operational technique, and completing engineering and development tests for the Materiel Command and Air Service Command. Most of the activity of the Proving Ground Command is centered at Eglin Field, but the Cold Weather Testing Detachment, permanently based near the Arctic Circle, also is under its jurisdiction. This detachment executes test directives pertaining to low temperature operations.

The office of the executive director of the board, located at Orlando, is the medium through which the board functions. The key assignments—tactics, organization, equipment, aircraft, armament and ordnance, and communications—are held by officers with combat experience, who are experts in their particular fields.

As a matter of operating procedure, all projects requiring action by the board should be addressed initially to the Commanding General, Army Air Forces. The board then operates under the direction of the Assistant Chief of Air Staff, Operations, Commitments and Requirements, who reviews, approves and implements its projects and findings.

In many cases experienced key personnel returning from theatres of operations are assigned briefly to the Tactical Center for duty with the board. This provides a channel for current combat information and tactics.

The findings of the board are reflected in the equipment the AAF soldier uses, the clothing he wears, the food he eats, the kind of war he fights. It is this agency's job to see that, in all these categories and more, he is the world's best air soldier. ☆

Brig. Gen. E. L. Eubank

THE GADGET DID THE TRICK

By Lieut. Col. William R. Stark

OPERATIONS OFFICER, AAF HEADQUARTERS, INDIA-BURMA SECTOR

MOST pilots are skeptical of new gadgets, particularly those that take the controls out of their hands. Barely three years ago when anyone ventured to suggest that a gadget could handle the controls and fly a better bombing run than the pilot, despite heavy bursts of flak and attacks by enemy fighters, any man with the wings would declare indignantly that no mechanical robot was going to fly his plane when the going got tough. After all, what's a pilot for?

That was the attitude of the men in our group when we arrived in India in the summer of 1942 with automatic gadgets on our B-24s. The devices, new Automatic Flight Control Equipment known as auto-pilots, not only were supposed to fly us to and from the target but on the bombing approach and the actual run over the objective as well. With such heavily defended areas as Rangoon, Bangkok and Mandalay for our targets, we were afraid to entrust the success of our missions to this mechanical robot.

Although we frequently played around with the auto-pilot to see what it could do, we didn't seriously contemplate using it on operational missions. Some of our new pilots had heard about the mechanical brain before they left the States, but none of the flight school instructors had urged the use of it at that time. Although many of our men had flown on the older type AFCE before, others had never been in a plane with it. Besides, our maintenance crews had their hands full keeping our few planes flying their regular missions. None of the ground mechanics had been trained to repair or maintain the auto-pilot because it had been installed after the completion of their technical training courses. And they didn't have the time to teach themselves while we were flying operational missions.

By October, 1942, after flying some special missions, our group was bombing targets in Burma about once a week. These were carried out exclusively by manual control of the plane, and there was no apparent reason for us to change our methods of flying at such a late date.

Then, one day, a civilian in an officer's uniform dropped in at group headquarters with the announced intention of living with us. His name was Ted Frystak and on each shoulder were the words "Tech Representative" instead of official rank insignia. He was a representative of the manufacturer of the auto-pilot and his mission was to assist us by keeping the equipment in A-1 condition—an extremely simple task since we had never used it anyway.

How the heavy bomber boys in India learned to rely on their auto-pilots for precision bombing after many months as non-believers.

We didn't know Ted Frystak then, but before nine months had passed we knew him well. By the spring of 1943 he had enabled us to fly practically all of our missions and about 85 percent of our bombing approaches and target runs on the auto-pilot. Not only did his work enable us to improve bombing accuracy from 25 to 50 percent, but it also possibly saved the lives of some of our crews.

Frystak's first job was to sell pilots and bombardiers on use of this type of AFCE. He started with the primary lesson, explaining the dual function of the auto-pilot. It could fly the plane in any attitude, level, banking, climbing and descending. Through coordination with the bombsight we were using, it could keep the plane on a true bombing run over the target, truer than could be flown manually by a pilot. It was the latter claim that we doubted, due partly to lack of spare parts for perfect maintenance, but we were willing to learn so we reserved our final judgment until later.

Arrangements for Frystak to hold classes with our maintenance men, our bombardiers and our pilots were made by Col. Conrad Necrason, group commanding officer, and the squadron COs. Even Maj. Wesley Werner, one of the best pilots ever to fly heavy bombers in India and the one pilot in a thousand who was able to fly a perfect bombing run ninety percent of the time, recognized the potentialities of the new auto-pilot and encouraged the training of his squadron personnel in the proper use of it. (Shot down over Burma in November, Major Werner had flown more than 500 combat hours when he led his squadron out on what proved to be his last mission. He is officially listed as "missing in action."—Ed.) All of us believed we should know what the equipment was and how it

THE auto-pilot is an electro-mechanical robot which automatically flies the airplane in straight-and-level flight or maneuvers it in response to fingertip controls operated by the pilot or bombardier. It consists of various separate units electrically interconnected to operate as a system.

If an airplane, flying straight and level with the auto-pilot in operation, is suddenly turned by a crosswind, the gyro-operated directional stabilizer detects the deviation and moves a directional panel to get the plane back on course. Similarly, automatic corrections are made if the nose of the airplane drops or if one wing drops.

With this equipment, the bombardier actually operates the plane on a bombing run. The result has been to reduce the vulnerability of our aircraft, because the effectiveness of enemy anti-aircraft fire is directly related to the time consumed in the bombing run. Single aircraft have made approaches with runs of only eight seconds.

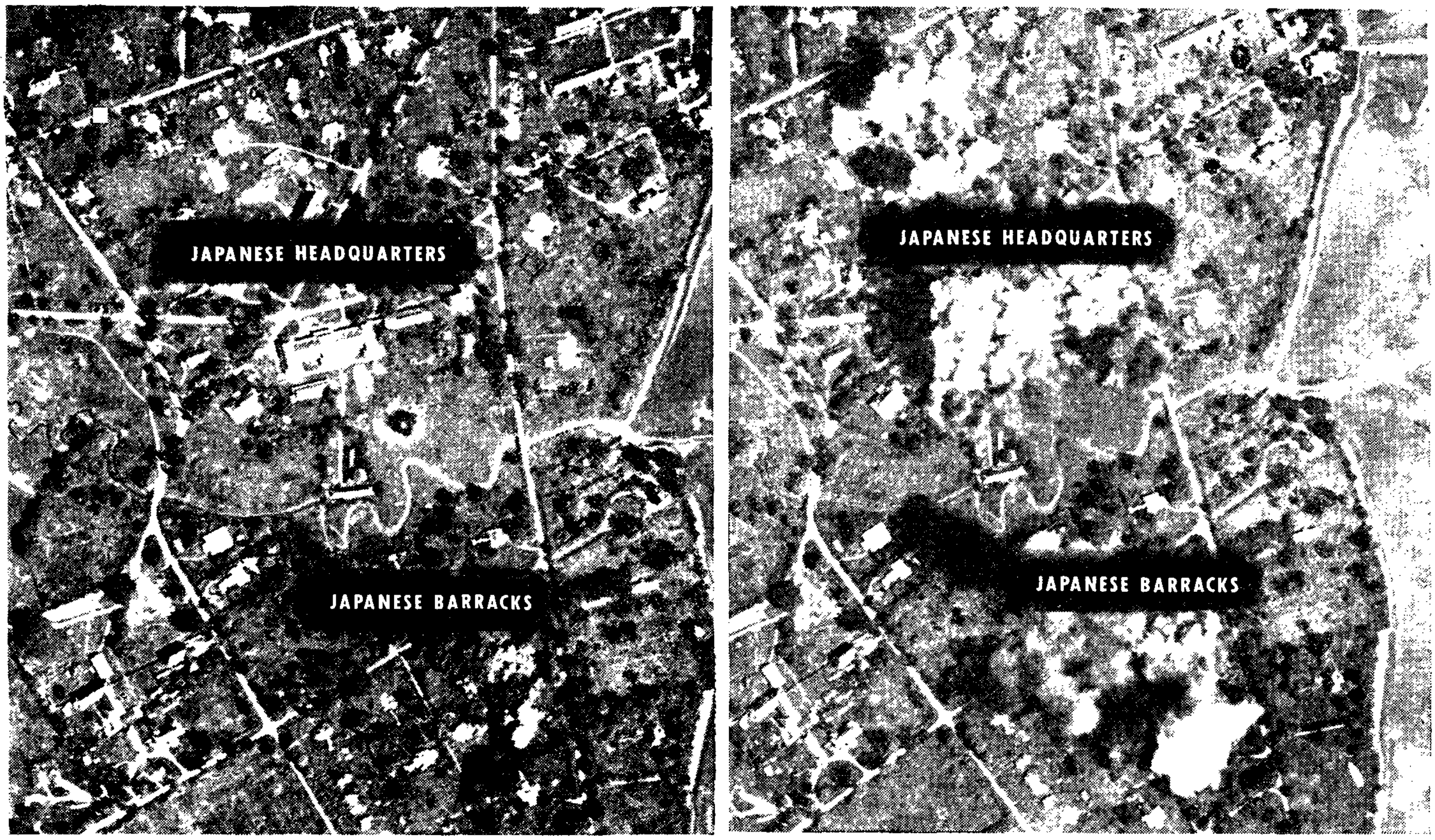
The greatest contribution, of course, is improved accuracy of bombing. It has been determined that application of the AFCE principle reduces the mean error fifty percent. This means that if the mean error is cut from 1,000 to 500 feet, the effect of the bombing is quadrupled. It follows that nine planes can do the work of thirty-six. It follows also that return trips over the target are cut to a minimum, fewer lives are risked, less effort is expended, and less equipment is needed to accomplish a mission.

AFCE dates back to 1926. Early in this war, largely because of rapid modifications of our bombardment aircraft, operational difficulties with AFCE became apparent. Through experimentation, done with the cooperation of experienced bombardment officers and manufacturing specialists, the major difficulties were overcome.

The proof of AFCE now is abundant. On many fronts it is being used by every bomber formation going over a target. Pilots, skeptical at first, now use AFCE on bombing runs as well as on long hauls to and from the target.

Along with other developments have come new methods of computing drift, dropping angle and length of run, plus new methods of using the computer to obtain figures quickly for any given heading.

The author of the above article was squadron commander and group executive of one of the first B-24 units to operate from India. He was largely responsible for the successful application of the newest AFCE to precision bombing missions over Burma.



Using auto-pilot equipment at 16,000 feet, B-24s of the 10th Air Force begin their run (left) on a Jap headquarters area somewhere in Burma. A few minutes later, smoke and debris billow from the targets (right).

should be operated, regardless of whether we ever used it on operational missions.

Since we had several days between each mission during the fall months, Frystak and Joe Wascavage, another technical representative, had plenty of time to help solve our maintenance problem while selling us on the merits of the device. Few of the pilots objected to the idea of using the auto-pilot as a relief pilot on their long flights to and from the target, particularly when weather was rough.

The men quickly learned the importance of trimming up their ship properly before flipping on the control switches, and before long they were beginning to fly on the auto-pilot, discovering that after unusually long missions (longest run was to Bangkok and return, 16½ hours, 2,700 miles) they were far less fatigued than when they had flown the same missions on manual control.

Frystak had won the first round with the pilots by doing them a favor. He had shown them how, through the use of the auto-pilot, they could fly without exhausting themselves on the controls.

Round two also was easily won, with the aggressive assistance of Maj. John Suggs, group engineering officer. Maintenance men began to pry into the auto-pilot to learn what made it tick and what could keep it from ticking. When their pilots began to rely on the auto-pilot on their long flights, the device had to be perfectly sychronized or some crew chief would get hell from the pilot for not doing his job. Then came round three, use of the auto-pilot on the target approach and on the bombing run. By this time pilots had grasped the fundamentals of using the gadget to and from objectives but bombardiers still had to be taught. Practice bombing missions were flown with four sets of pilot-bombardier teams. Target area was a white bulls-eye circumscribed by two circles, with 100-foot and 200-foot radii. Each team would make several runs on the target from 8,000 feet, dropping their practice bombs and visually observing the results while Frystak stood over them to correct mistakes made in setting up the auto-pilot.

Just as teamwork between pilot and bombardier is extremely important on manual bombing runs, to make a successful bombing run with the robot, it is essential for the pilot to have the auto-pilot perfectly adjusted before turning into the target for the run. The bombardier should know in advance how much drift he will have to compensate for, the exact altitude and air speed the plane will be flying, and the angle of the last approach turn by the pilot when he starts the ship in on its bombing run and turns the auto-pilot over to the bombardier and the bombsight. With perfect coordination and teamwork, the bombing run can be made successfully in eight seconds.

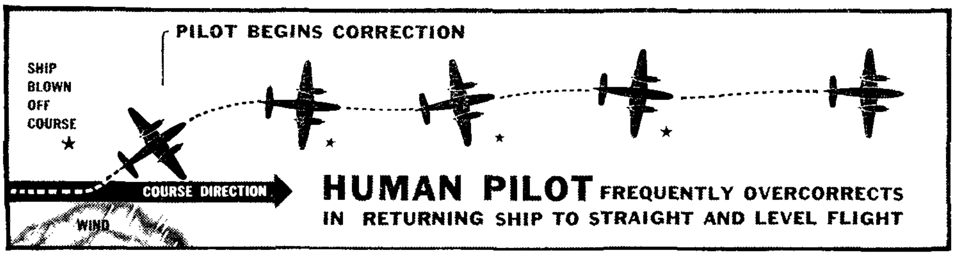
By the end of the year, most of our bombardiers and pilots had learned how to use the new gadget properly. The accuracy of their practice bombing was better than their actual bombing over enemy targets. While conceding that the auto-pilot might have advantages over manual control of the ship for practice bombing, all crews agreed that the bombing of enemy installations was entirely different. They still had to be shown and no one was anxious to be the first to try a raid with the robot at the controls.

By the turn of the year, the auto-pilot was being used to and from most targets with such success that crews felt fresh enough to fly more and more combat missions. If this had been the only advantage gained, the device would have been a real contribution to our raids against the Japs. However, before Frystak returned to the States last November, he had witnessed operational successes attributable largely to the complete use of the auto-pilot by the entire bomb group.

Many months earlier, when we had begun to run out of excuses for not giving the gadget a chance at proving itself over enemy targets, our Squadron COs—Maj. Earl R. Tash and Capt. Willard A. Fountain—started using it. On one of the first trials, I was flying in the lead ship, so it was up to me to set up the auto-pilot and then turn the entire control of the plane over to my bombardier and his bombsight. The other planes in the formation relied on the gadget in my plane for proper course over the target; their only work was to sight for range. We didn't run into any trouble and our bomb-pattern was near-perfect on our target for the day. When we returned to base there was only one report to make, the gadget was *just as good over an enemy target* as over a practice bombing range when the equipment is set up properly.

The ice was broken and the majority of our pilots began to use the auto-pilot on their bombing runs as well as on their long hauls to and from the target. On a later raid over Bangkok, Maj. Harry Watkins led his squadron through to the target despite bad weather and bombed it successfully. The mission lasted 16 hours and 30 minutes and the major flew 16 hours and 10 minutes of the time on the auto-pilot. The 20 minutes of manual control were used in taking off and landing.

Successful use of the device on complete missions was a gift from the gods for the navigators. Nowadays, if the pilot starts to fly his ship manually, he usually will hear a loud gripe over the interphone from the navigator in short order: "Throw it back on the auto-pilot so we can keep a straight course."



HUMAN PILOT FREQUENTLY OVERCORRECTS IN RETURNING SHIP TO STRAIGHT AND LEVEL FLIGHT

Never without an answer, the pilot snaps back: "Just wanted to see if you were awake." And both enjoy the free ride on AFCE.

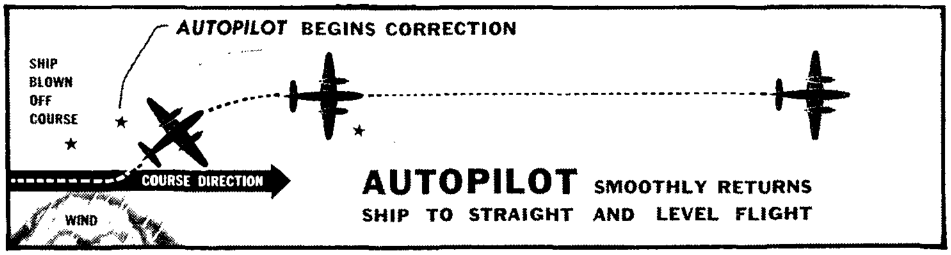
Even though the gadget proved itself to be almost-human, it can't be made to see or to think. Control knobs have to be adjusted *in flight to compensate for changing* wind, fuel consumption and other variables. The bombardier also has to be skillful in the adjustment of the knobs on the bombing run to place his eggs exactly on target. The auto-pilot can fly mild evasive maneuvers, such as those required to avoid enemy anti-aircraft and fighter interceptions, while holding the bomber formation together. However, on after dark raids when night fighter interception gets hot, making violent evasive maneuvers necessary, the pilot takes over and puts the plane through aerobatics that the auto-pilot never could accomplish.

There have been instances when the auto-pilot has saved the crew of a ship. While on a bombing run over Burma, the formation leader was attacked by Zeros and an explosive shell burst in the cockpit, temporarily knocking out both pilot and co-pilot. The rest of the formation was flying course set by the leader. Fortunately, the lead plane was under control of the auto-pilot so, when a quick-thinking crew member saw both pilots were unable to change course, he twisted the knobs and the plane went into a turning bank and headed for home with the other planes trailing in perfect formation behind—*a formation that proved to be a* protective cover for the wounded ship. Had the plane not been on auto-pilot, it probably would have fallen out of formation and been easy prey for the Zeros.

In other instances, some of the control cables have been shot away but the auto-pilot controls have remained intact and flown the plane back to base. Frequently the auto-pilot "takes over" while the men in the cockpit render first-aid to battle wounds of other crew members.

While our heavy bomb group was proving the value of the auto-pilot, further improvements in its operation had been developed in the States. These we learned about when some of the men responsible for the new modification arrived from Headquarters in Washington.

Frystak took the blueprints and went to work on all of our auto-pilots. He and the mechanics really "sweated out" the modification under a broiling sun that ran temperatures up to 140 degrees in the planes. Within a short time, the modification had been incorporated in all our aircraft and from that time on we began the *intensive flying*—even through the 1943 monsoon season—for which this 10th Air Force heavy bomb group is now famous.



AUTOPILOT SMOOTHLY RETURNS SHIP TO STRAIGHT AND LEVEL FLIGHT

With the Washington officials came another technical representative, George Smith, who continued his trip into China to assist the new heavy bomb squadrons of the 14th Air Force. Smith didn't have a practice bombing range and the squadrons he worked with didn't have any spare gasoline or bombs, for in China every drop of gasoline and every ounce of powder is expended on the enemy. Transportation of supplies to these AAF bases is too difficult to permit waste of anything on practice. Smith, nevertheless, found a way to run practice missions with his pilot-bombardier teams.

Every time one of the planes flew to India for bombs, gasoline, food or anything else, Smith would ride along and give his team a course of instruction on the way. Then, on the return trip, there was a *target which proved to be excellent* for practice bombing. It was a Jap air base and supply center. The crews would set up their auto-pilot and unload a couple of bombs on the Japs, then circle around to see how they were progressing in their instruction course. Fortunately, the base seldom offered serious resistance, for it would have deprived a lot of crews of the 14th Air Force from making practice bombing runs on the auto-pilot.

Because the crews that were sent to China had trained with the auto-pilot in the States, they started using it immediately on all missions and most of their bombing runs.

With enemy targets in Burma and occupied China as small as they are—such as bridges only eight feet wide, single-track railway viaducts in the mountains, merchant ships and river barges—our bombing has to be good in the CBI theatre of operations. A perfect pattern of bombs many times had blanketed a target but not destroyed it. Such freakish bombings are discouraging to crews but the men always have persevered until destruction of the target has been confirmed. The legend of the Mytinge bridge, for instance, includes such near-misses as the passing of a bomb through the trestles without hitting any supports, the puncturing of the flooring by another bomb, and the complete obliteration of the bridge by smoke and water from a perfect pattern of bomb explosions—yet the bridge still stood. It was knocked out temporarily several times, probably permanently in September. Another extremely difficult target has been a railway trestlework hugging the side of a steep mountain. Time after time, the bombs have dropped in a concentrated area apparently on target yet pictures later have revealed the structure to be undamaged because of the mountain shield and the open trestle-work through which bombs pass harmlessly.

With the necessity of flying perfect bombing runs to hit these small targets, our pilots rapidly perfected a coordinated use of the auto-pilot until most missions now are being flown on the device, missions that have almost literally dropped bombs in "pickle barrels"—precision bombing missions that have built up a wide reputation for the heavy bombers of the 10th and 14th Air Forces. ☆

Notes from the Air Surgeon's Office:

When to Use the 'BENZEDRINE ALERT'

★ ★ ★ ★ ★ ★ ★ ★

Maj. Gen. David N. W. Grant

THE AIR SURGEON

"WAKE up, Joe, we're almost home." It's the co-pilot, talking over the interphone system. After a moment of silence the reply comes:

"Yeah, OK—but I can't keep my eyes open."

Joe may be the tail gunner of a B-24 returning from a block-busting raid on Berlin. Or Joe may be the pilot of a night patrol plane over the North Atlantic.

Joe, the gunner, got quite a workout with the FW-190s and, now that the shooting seems to be over, he can't help dozing at the trigger. An enemy fighter could sneak up and roost on his sights before he could aim a shot.

Joe, the pilot, has had a tough fourteen hours of sea roving. A low ceiling has forced the plane down to within fifty feet of the waves, yet he can't keep from nodding. "Disappeared without trace" is the way the report might read.

Both Joes are so dead tired that no amount of will power can keep them alert—as alert and cagey as they were when they took off on their mission many hours before. They have won all the battles in the successful completion of a mission—against weather, against darkness, against high altitude, against the enemy—all the battles but one: they are losing the battle against sleep.

That battle can be won, too—with benzedrine.

As the result of extensive laboratory and field investigation of the value and limitations of benzedrine, also known as amphetamine, it has been determined officially that this drug is the most satisfactory of any available in *temporarily postponing* sleep when the desire for sleep endangers the security of a mission.

The responsibility for the tactical use of benzedrine rests with the commanding officer, who must decide when the situation demands it. Distribution and administration of benzedrine, however, is the responsibility of the medical officer. When it should be used, how much is needed and what the effects will be are matters of interest to every member of a tactical organization.

A definite understanding of the military use of benzedrine is especially necessary because of the disgrace into which the drug fell a few years ago following the abuse of its anti-sleep properties.

The benzedrine molecule was discovered in 1930 in the search for drugs having nerve-stimulating properties similar to those of epinephrine, more commonly known as adrenalin. Benzedrine (pronounced BEN-zuh-dreen) was found to have the ability to reduce the size of blood vessels for short periods. This shrinking property made it popular as a nasal inhalation for relieving the stuffiness of head colds. Whereas adrenalin acts on the nerves controlling the automatic functions of the body, benzedrine proved to be a stimulant to the brain, particularly the outer layers which form the center of the intellect. The effects were like those of the caffeine in coffee, but more marked.

THE drug was publicized as a means of dissipating mental fog due to sleepiness and soon college students were using benzedrine "pep pills" during cramming sessions and final examinations to ward off sleep and clear their minds. Instances of excessive use caused the Council on Pharmacy and Chemistry of the American Medical Association in 1940 to issue a warning against the use of benezedrine for the prevention of sleepiness except under medical direction. Indiscriminate, unsupervised use not only exposed the individual to the danger of a nervous breakdown but also violated the medical axiom that interference with the body's normal functions is a liability to good health. Sleep is one of these functions. It is a physiological necessity which needs no proof to anyone who has attempted to go without it.

In peacetime, our desire to go to bed when we become tired seldom presents a serious obstacle to the success of our work or, carried further, rarely jeopardizes our survival. In time of war, however, combat conditions frequently require men to remain on active duty long after the desire for sleep tends to overpower the demand for wakefulness.

The importance of the "sleep crisis" may be appreciated if one remembers that military success depends not only upon the arrival of enough men and equipment at the right place at the right time, but also upon their continuation in action the right *length* of time. To win a battle, in other words, striking power must be supported by *staying* power.

Under ideal conditions staying power is obtained by the replacement of tired men with rested reserves. The commanding officer will recognize that both military and humanitarian considerations necessitate conservation of manpower. Despite the extended mechanization of modern warfare on the ground and in the air, the physical and mental endurance of individual fighting men must be, as it has been in all military history, the deciding factor in many engagements.

While stamina varies greatly from one man to another, no man can work, think or fight well for more than a relatively few hours before his performance drops below par and his nerves and muscles seek to rejuvenate themselves in sleep. When this point of exhaustion is reached in the midst of a military mission medicinal interference with the desire to sleep loses its objectionable qualities. Rather, the use of benzedrine fortification in such an emergency becomes a great boon: one pill may be worth a B-17 and crew of ten when the man who is flying it can no longer stay awake.

The effect of benzedrine upon a person ready to fall asleep is to restore his alertness and produce a sense of well-being and confidence without impairment of judgment. The drug is of no value to well rested or moderately tired individuals. In fact, its benefits appear to be in proportion to the degree of fatigue.

The amount of benzedrine required to prevent sleep where the fatigue is largely mental, as in the case of pilots, is smaller than that needed by men doing heavy physical work. A single dose should not exceed five milligrams to relieve mental weariness, or ten milligrams for physical fatigue. In both instances, the drug should be taken only when the tired feeling becomes excessive. Thus, the man facing the "sleep crisis" achieves the maximum intensity and duration of stimulation.

The ten-milligram dose should not be repeated more often than every six hours, but the five-milligram dose may be repeated every three hours. The safe limit of total dosage is thirty milligrams in any one week.

This amount, if consumed in the course of one mission, will permit about thirty hours of continuous effective action provided the men begin fresh and take the first benzedrine ration after three or more hours of activity. It is not desirable to use the drug on missions of less than six hours unless the men are already tired.

The drug begins to take effect within thirty to forty-five minutes after taking and attains its maximum influence within sixty to ninety minutes. The effects slowly subside over a period of five to eight hours, depending upon the subject's need for sleep. In a rested man, a single dose may postpone sleep for eight to twelve hours. In a tired man, the demand for sleep eventually will become powerful enough to overcome the drug's influence.

Since benzedrine does not provide rest but merely conceals the need of it, sleep following a "benzedrine alert" preferably should be of such duration that the accumulated fatigue is completely relieved. In general, benzedrine should be employed with the realization that the body's demand for sleep will become urgent in from thirty to sixty hours after the last period of normal rest.

UNDER unusual circumstances where an opportunity for sleep presents itself while the drug is still active, a mild sedative can be given by the medical officer to counteract the insomnia produced.

Benzedrine is not habit-forming in the sense that a tolerance or physical craving for the drug may be acquired. Like the morning cup of coffee, however, the drug produces a stimulation so pleasant that the problem of excessive use may arise among individuals without sufficient will power to do without an unneeded "crutch." For this reason the administration of the drug should be under the control of a medical officer.

Overdosage in fatigued individuals produces undesirable effects similar to those experienced by rested persons under the influence of small doses of benzedrine; excessive excitement, tenseness or uneasiness, palpitation and headache. A nervous breakdown due to lack of rest may follow continued loading of the body with benzedrine. However, if the drug is properly used, there is a wide margin between the required dose and an excessive dose. Because a few persons are abnormally sensitive to benzedrine in ordinary amounts, five milligrams should be given as a test dose for toxic effects in advance of missions wherever possible. If a sensitivity is found, the individual should *not* use benzedrine during flight. Such men will have to rely on coffee to keep them awake —if they can get it.

A variety of experiments in the laboratory and in the field have demonstrated the value of benzedrine. In a series of tests in the Aero-Medical Laboratory, Wright Field, a ten-milligram dose of benzedrine significantly improved the coordination of individuals undergoing long, boresome, routine tasks. This dose was recommended for flyers on long, routine flights, for fatigue on return flights, and in emergencies where repeated missions must be carried out.

Crews flying night patrols for periods ranging from four to eighteen hours were the subjects of another study. The investigator gave benzedrine tablets, in doses of ten to fifteen milligrams, and dummy tablets, containing chalk and sugar, at random to the flyers showing signs of fatigue. One-third of those receiving benzedrine recognized that they had received the real thing and, judged both subjectively and objectively, received marked benefit from it. The pilots, co-pilots and navigators showed the most need, and they were glad to get the drug. In contrast, gunners who worked in watches and customarily slept in bunks while off duty complained of insomnia. In planes where the gunners were required to remain continuously on duty, however, the drug appeared to relieve their boredom and to improve vigilance. Little need for a stimulant was found on the four-hour patrol except among those returning from trips where gruelling combat or weather conditions were encountered. No undesirable side-or-after-effects were noted.

In another experiment, 100 Marines were kept continuously active for 60 hours range firing, a 25-mile forced march, a field problem, calisthenics, close-order drill, games, fatigue detail and bivouac alerts. Fifty men received seven 10-milligram tablets of benzedrine at six-hour intervals following the first day's activity. Meanwhile the other fifty were given dummy (milk sugar) tablets. None knew what he was receiving. Participating officers concluded that the benzedrine definitely "pepped up" the subjects, improved their morale, reduced sleepiness and increased confidence in shooting ability. During the first night, when the forced march was made, it became apparent that the benzedrine group was in better condition than the control group. The latter, however, demonstrated a psychological benefit from the dummy pill; they simply believed that the benzedrine group had received a more potent stimulant. In firing eighty rounds daily with the M-1 rifle, the benzedrine group showed a significant superiority in the number of hits (bull's-eyes) and in firepower (hits per minute), although their total scores on an "A" target at 200 yards were not significantly better than the control group's. It was observed that men receiving benzedrine tended to lead the march, take their sore feet and blisters more lightly, and to remain wide awake during "breaks," whereas members of the control group were inclined to indifference. No harmful effects from benzedrine were noted. The subjects had no difficulty in sleeping at the end of the experiment.

THE use, effects, dosage and limitations of benzedrine were described for the medical officer in War Department Circular Letter No. 58, issued by The Surgeon General on 23 February 1943.

In a letter from the Office of The Adjutant General on 7 August 1943, the commands of the Army Ground Forces were informed that "The large scale use of benzedrine is essentially a command decision."

"It is the responsibility of commanding officers," the letter stated, "that personnel are instructed in the use of this drug and that it is administered under the supervision of medical officers."

Ground conditions under which benzedrine might be utilized were listed as follows: task problems continuing from 18 to 36 hours without opportunity for sleep; all-day combat problems followed by guard or alert duty through the next night or day; missions carried out by isolated parachute troops or soldiers over a period of 48 to 60 hours; night patrols involving missions of not more than 12 hours; truck-driving requiring day-and-night duty or continuous driving for eight to ten hours.

Studies have provided conclusive evidence that benzedrine has a definite military use as a temporary sleep preventative. It is therefore recommended to AAF commanding officers for use among personnel on tactical missions involving losses of sleep.

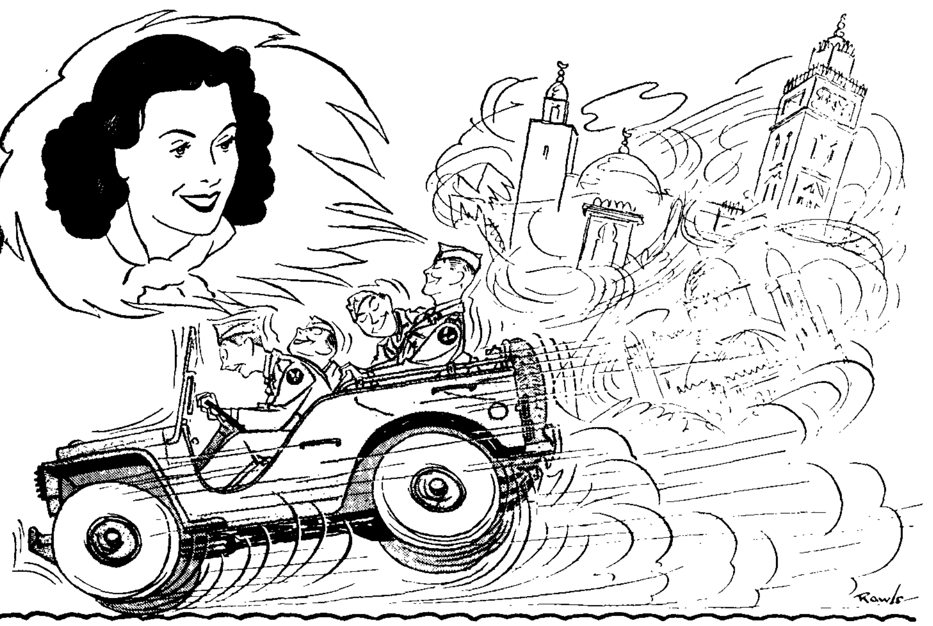
Regulation of distribution and administration should remain under Medical Corps direction to prevent misuse or abuse, either by officers or enlisted men. The large scale use of benzedrine should be attempted by the tactical officer only after consultation with a medical officer.

Both the commanding officer and his men must understand that benzedrine will not produce supermen. It merely postpones for a relatively short period of time the body's pressing demands for rest. The drug is not a substitute for sleep, and its practical value will be defeated if the individual using it is denied proper rest following a "benzedrine alert." Properly employed, it will give an army a few extra man-hours of fighting at the time they are most needed. ☆

2 WAYS TO MANDALAY . . .

A LITTLE railway line which runs from Myitkyina, in the upper Irrawaddy River Valley, to Mandalay and then south to Rangoon, has been the Japs' main supply artery in Burma. But India-based United States and British bombers have smashed the terminal yards at Rangoon, Pyinmana, Thazi and Mandalay, and demolished important rail bridges at Wuntho, Myitnge, Loilaw and Mu. The poundings have forced the Japs to try shipping much of their supplies by boat on the Irrawaddy River which parallels the railroad line. During the monsoon season the river is navigable for large vessels up to Katha, between Mandalay and Myitkyina. When the Japs turned to the river, however, Allied bombers turned there too. Japanese shipping losses have become so heavy that they are obliged to ship only during the night. In the daytime, the Nips camouflage their river boats to blend with the banks, or disguise them as promontories of the wooded shoreline. But even these devices are not working so well, for low-flying bombers on regular river sweeps often detect the camouflaged boats since the pilots are able to observe the shore at an oblique angle. In this instance, a cleverly camouflaged river boat, almost perfectly disguised by a foliage cover, was spotted by a B-25 which scored hits amidships causing the vessel to burn and sink.

No Boyer, Very Little Lamarr



By Capt. George Bradshaw
AIR FORCE STAFF CORRESPONDENT

When you are in North Africa and get a little time off you make for Algiers. By hook or crook, by plane or truck or even your own two delicate feet, you get to Algiers. There, your spies tell you, is where the stuff really is; that's where things are going on; that's where the big boys hang out; that's where the babes are; that's where the market is really black.

You're in for some surprises.

In the first place, there is one thing you have to remember about Algiers. It never snows. Just why this is so, no one has been able to figure out. God knows, it's cold enough. You are going to shiver while enjoying your leave.

With that in mind, you might as well be sensible and stay in bed all morning. There's nothing to do, anyway, if you get up. If you have friends in town they'll be working; the movies aren't open, neither are the cafes; about all you can do is sit around a canteen and read six-month-old magazines. So stay in bed.

When you do get up the thing that will surprise you most about Algiers is how big it is. The place goes on forever —and this is brought home to you by the fact that if you want to get anywhere you have to walk. There are no taxis—well, maybe one or two—and the streetcars are off limits for soldiers. Civilians must have a few breaks.

You push around the streets on foot—and push is the word. The other night the German radio from Paris gave a description of Algiers. An abandoned city, it reported. "The streetcars don't run, the restaurants and shops are closed, the streets are deserted." So said the Hun.

But just ask the GI who has tried to cross a Rue. New York in those old golden days when there was plenty of Esso was never like this. Every kind of truck, reconnaissance car, staff car and jeep, captured volkeswagons, lumbering 8th Army trucks with desert camouflage, ambulances, Navy station wagons (yes, Navy station wagons) and French civilian cars—a lot of them run by what look like old-fashioned waterheaters.

And the people. Soldiers, sailors, French, British, American, in every conceivable uniform. The British in their smart, practical battle dresses, decorated with all manner of warlike insignia and flashes; the GI, well certainly you know what a GI looks like by now; the French, also in GI uniforms, except the ones who wear great red or blue or yellow capes. And all the native troops. Goums you call them. Any uniform you don't recognize you call a Goum. Of course, there are still all the civilian types who fill up the town pretty well in the first place.

And let us not forget the veiled Arab women.

Even at this late date a word might well be spoken about the veiled—and barefoot—Arab women. They are a hardy race. On a day when any sensible GI has on two pairs of socks, Mademoiselle Arabe goes plodding along the icy streets in her pinkies. Maybe she has a cold in the head—but that's something the eyes of western man are not permitted to see.

It's that veil.

Mysterious and romantic it sounds and all that—from a safe distance,—say Jefferson Barracks, Mo. But up close . . . well you can bet that veil hasn't been washed since before Pearl Harbor.

What a spot this place would be for one of those American advertising campaigns. One of those soap ad cartoons. You know. . . .

In the first picture the little Arab boy, sad-faced, is hanging around the kitchen while his mother cooks up a fine meal she has found in the garbage can outside American Officers' Mess. "What ails thee, Mohamet?" she says. "Why don't thee go out and shine shoes like the other boys?"

In the second picture the little Arab boy—and Mohamet is his name, no kidding—says, "Gee, mom, all the fellows say your veil is tattle tale gray. . . ."

In the third picture we have mom in the privacy of the harem taking off the veil and giving it a good look. "By Allah," she says, "the kid's right."

Then we have a long series of pictures where mom goes into the market place and haggles for a bar of Fels Naptha. Then she goes and sells it to any American soldier for three times what she paid for it.

Wait. We got back into real life for a minute there. Home goes mom with her soap, off comes the veil, and to the music of a gay old Arabian beheading song the veil is washed in a bucket of cold water. (Pretending there was hot water in Algiers would be going a little too far.)

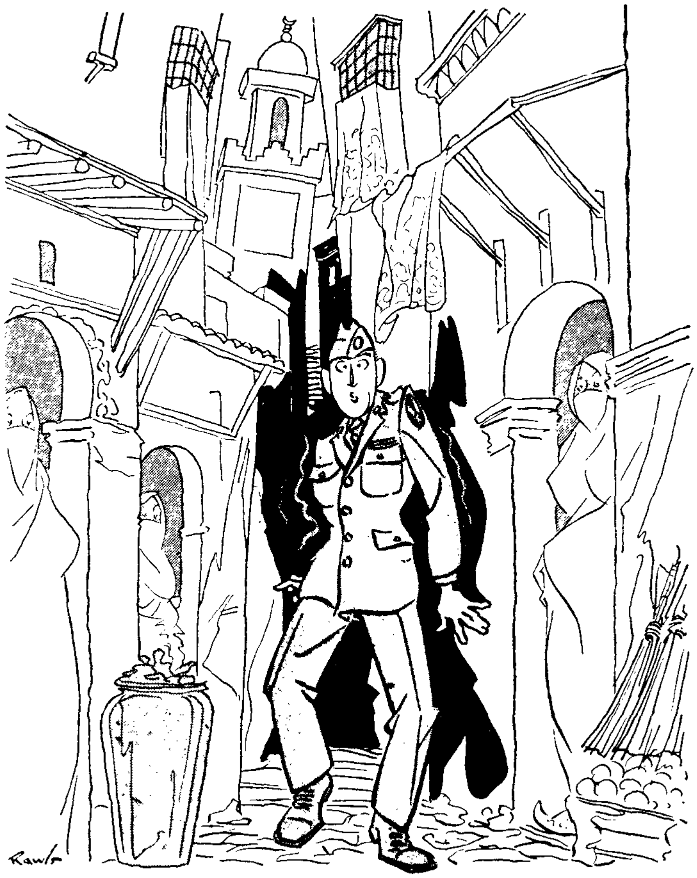
The last picture shows Mohamet, happy again, dancing around with the other fellows, who let him have first chance on all the shoe shine jobs—boy, is this fiction—and mom, looking ten years younger, and a lot more sanitary, watching from the balcony. And just to make the whole thing really absurd, the sun is shining.

How we Americans falsify the actual . . . but boy, how we sell soap.

Sooner or later you are going to get hungry. You have been in North Africa long enough to know that no matter where you go you are not going to find any Southern fried chicken and apple pie, so you go hunting around for a little place on a back street where one of your spies told you they have beefsteaks and eggs. You go in and hint around in your excellent French (which consists of English spoken very loudly). You discover

Illustrated by James T. Rawls

Those dreams of babes and romance in Algiers will vanish into smelly air when you tour the grounds.



your spy was a damned liar. Finally, you eat what you get in any cafe on any street.

You'll get soup, tasting suspiciously as if meat had been in at one time or other, then a salad of tomatoes and lettuce, which the medical officers have told you to eat under no circumstances, then some kind of stew, or maybe, if you're lucky, some lamb, probably a vegetable, lots of hard, brown French bread, a bottle of wine and, for dessert, tangerines. No matter what else they don't have in North Africa, they have plenty of tangerines.

Well, it is not by any means as good as the food you get at your mess, but it's a change, and you don't have to stand in line. If, in the afternoon, you get hungry—and you probably will—you can stop in for something at the Red Cross. That's a fine institution, the Red Cross. It's the only place in town you can always get something to eat, and a comfortable place to sit down. In years to come there shouldn't be any trouble with quotas for the Red Cross drives—not from the boys who were in Italy and Africa.

Let's say you're fed. What to do? You can walk around and look at the war memorials or wander through the stores although they have nothing you want, for this is a sold-out town; you can hang over the parapet above the waterfront and watch the freighters and the battleships; you can sit in the park and have your shoes shined by one of a million shoe shine boys. Or you can go to the movies.

If you have been over here long enough—say five years—the movies will seem new to you. Otherwise you'll go to them because it's raining. At the moment you have your choice of "The Goldwyn Follies," "The Lady Vanishes," Deanna Durbin in "It's a Date," and "Les Commandos Frappant," which turns out to be "The Commandos Strike at Dawn." You can't just drop in on a movie. They run only at certain hours; the lines are worse than at the Paramount when Sinatra sings, and the film has a habit of breaking every fifteen minutes. But what the hell, it is something to do.

You can't write a GI tourist's eye view of Algiers without mentioning the one really famous part of the town, but the trouble is, the Casbah is out of bounds—and that means you too, Lieutenant.

Of course, there's a way to get around everything, even an MP, and in Algiers the way has been found by the most sensible of agencies, Thomas Cook and Sons. The GI, even when clutching the warm, tender hand of his sergeant, is not allowed to venture into those Lamarr-hallowed streets, but under the watchful eye of a Mr. Cook's guide the joint is supposed to be as harmless as Chinatown.

And cheaper. For thirty francs—sixty cents—you can look all afternoon.

It's not all legitimate Casbah. First you are forced into a number of churches and public buildings which you would ordinarily avoid, *and* you are given long lectures on the tiles. Tiles are a great thing in Algiers. No floors are made of anything else; everything is tiling—fancy, plain, of every color and design. The only thing you never find out is why. All the tiling does is make your feet cold.

Finally you get to the Casbâh. And, brother, it is not what you expected. Maybe if you lived in the Casbah for awhile—says fifty years—you would come to love it, but for a winter afternoon's stroll it is just a long walk.

The guide warns you to be careful of fleas and pickpockets, and he is not merely making idle conversation.

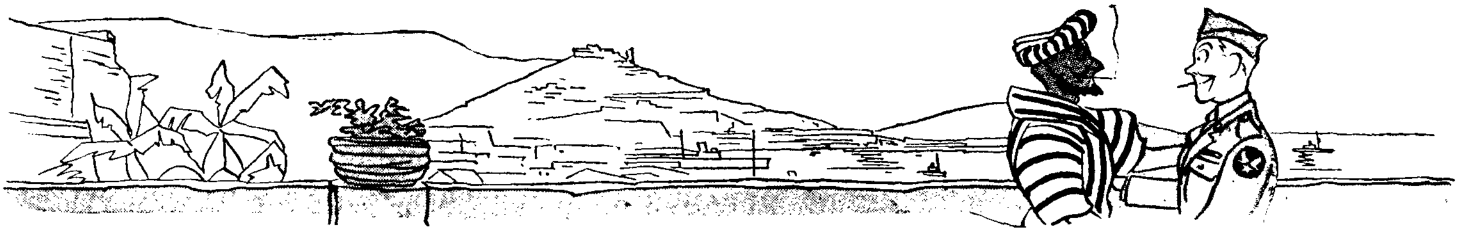
The Casbah is old. The word actually means fort—and there is a fort which is now a museum—but gradually it has become the designation of that part of North African cities where the Arab population lives.

There is nothing in America to which you can compare the feeling of oldness you get from the streets and buildings of the Casbah. That filth and those smells must be thousands of years old—no mere matter of centuries could produce them.

The streets are narrow, crooked, winding. Some of them are no more than lanes where two people can just walk abreast. The facades of the structures—you can hardly call them buildings—are dull and dirty. Whatever life goes on in this place is confined to the interiors and the rooftops. The women work and chatter on the hidden balconies, up in the sunlight above the filth, with a view of the busy, handsome harbor. A street to an Arab is simply a means of getting from one place to another. They never think of it as a promenade in the sense we do. Wide avenues flourish as places for women to see and be seen, and the Arab woman is hidden behind doors. At least the good-looking ones are.

You'll see for sale, spread out on the dirty street, every kind of article, from the greasy rags which the men peddle as clothes to pieces of mouldy bread. And the prices are high.

When you return to the brightness of the French part of Algiers, you get a shock. It has never seemed a clean city, but after the Casbah it seems spotless. ☆



FLYING SAFETY

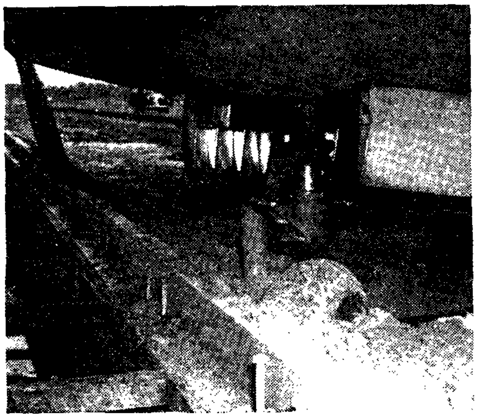
Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction.

These items are for educational purposes and are not to be construed as directives.

How Not to Stop

The photograph below depicts a sad anti-climax to an otherwise nice job of handling an emergency.

The pilot of this B-26, finding himself without hydraulic pressure, brought his plane in with skilled technique, including use of the air emergency system for his brakes to bring the plane to a stop.



Then he nullified the good work. Using the hand pump he built the hydraulic pressure up to 1,000 pounds, released the air pressure, and started to taxi. He knew his hydraulic system was defective (the trouble was later traced to the master brake cylinder), yet he started and, as advertised, the pressure fell off to zero. The wall finally stopped the plane.

COMMENT: TO 01-35EA-1, dated 20 March 42, states that once emergency air pressure has been used do not release the brakes until the plane is in the hands of the ground crew. Anyway, why try to taxi a plane with doubtful brakes on a field cut up with ditches?

A Dangling Belt is Useless

A colonel of the Engineers, who has served as camouflage officer in Hawaii and Alaska, has spent considerable time in the air with both Army and Navy pilots. He reports that the Navy boys are much the smarter in the use of safety belts. In fact, his experience has been that Army pilots aren't smart at all.

He brings out a point that the average flyer tends to forget. No pilot is sufficiently omnipotent to know when his plane might hit a down draft strong enough to throw him from his seat.

This is especially true when flying over a strange territory.

"I have experienced tremendous drops due to down drafts, in some occasions dropping as far as 800 feet," the colonel said. "In one instance while flying with the Navy (in Hawaii), the ship got into a down draft and fell so fast that five of us in the cabin, who were engaged in photographic work at the time, were knocked unconscious. I am convinced that were it not for the fact that both the Navy pilot and co-pilot had their seat belts on at the time that I would not have lived to dictate this letter."

A few days later, three Army fighter planes flying formations in the same territory mysteriously cracked up and all pilots were killed.

Refusal to wear seat belts and safety harness simply denotes a careless pilot who is asking for it.

Competition Helps

The accident rate at a southern primary school was reduced by the introduction of competition among instructors. Names of the instructors are listed on a bulletin board and when the student of one has an accident, whether dual or solo, an appropriate entry is made.

Keeping Tabs on Grads

When a pilot graduates from Turner Field's twin-engine advanced flying school, the school's interest in him doesn't stop there.

Reason is that from performances of past graduates the school can mold its future policies and application of training methods.

Here's how it works:

After the pilot graduates from Turner Field a questionnaire follows him to his new operational training unit asking about his flying proficiency, accident record, general remarks on his ability and other pertinent data about the pilot—good or bad.

The director of training keeps a chart on each class and enters information on individual pilots as the completed questionnaires come in from OTUs.

From OTU averages and remarks the director of training can pick out the weak and strong points of the training program.

Taxi Correctly or Walk

Student pilots can be impressed with the importance of careful taxiing, it has been found, by penalyzing carelessness with a tour of duty as a wing walker on the ramp.

More on 'Featheritis'

In the February issue of Air Force, the Office of Flying Safety provided an article on engine failures in multi-engine aircraft which might require slight amplification for newer pilots.

The point was made that an engine should not be feathered as long as it delivers approximately twelve Hg. of power. An important exception was noted, which OFS feels should be still further emphasized--that is, when an engine is vibrating excessively.

When this condition occurs, and the vibration cannot be brought under control by reduction of power, the feathering process is mandatory.

Pilots were advised to check the oil temperature on an engine showing decreased oil pressure before deciding anything is radically wrong. To make the point stronger, OFS adds that a fluctuation of oil pressure, within normal operating limits is not unusual.

It was stated that a rough engine at times can be cured by switching to single magneto operations. OFS desires to remind pilots that when an engine is operated on one mag, power should be reduced and the mixture richened.

All-around Men Scarce

The days in the AAF when a pilot was equipped to fly anything after a brief check out are gone forever. In the first place, the experience level is necessarily low and, secondly, modern combat aircraft daily become more complex.

The Seattle Fighter Wing has adopted a simple yet ingenious device of keeping track of a pilot's qualifications to fly a particular type of plane.

When a pilot checks out in a plane he

is issued a qualification card for that particular equipment. The card must be kept alive by the accumulation of time, otherwise another check is required.

USE THE RSO

Rapid expansion and turnover have created a condition in which key officers of an organization often lack a thorough knowledge of emergency procedures and instrument flying.

Here's a tip to the commanding officer:

Regional Safety Officers of the Office of Flying Safety have assisted at a number of bases in bringing such officers up to standard. Usual method has been for an RSO to check the proficiency of flying personnel, then choose the most experienced to serve as instructors for the others. Best results are obtained when a regular schedule for the instruction is established.

TEACHING TEACHER

Link trainer instruction at one base was considerably improved when the operators were given actual practice in working out radio range problems. Many operators know little or nothing about range procedures.

SAFEGUARD THE FIGHTERS

With inclement weather conditions prevailing in many parts of the country, great caution should be exercised in clearing fighter aircraft, fitted with VHF radio equipment, to a station where an instrument approach might be needed. The majority of control towers cannot be contacted with this equipment.

DON'T FLIRT WITH WATER

Pilots being briefed for overwater missions should be reminded of the danger of low flying. It's not safe, as many pilots believe, to buzz the waves because there are no obstacles to hit. On the contrary, it's extremely hazardous. Water, especially on a calm day, provides little or no point of reference by which to judge altitude. A B-26 was lost in the Gulf of Mexico recently because the pilot was unaware of this fact.

FLYING ON A DIAGONAL

Many young pilots are not equipped to understand the implications of a "red diagonal," yet are afraid to ask questions, or reject the plane, for fear of censure.

Recognizing this situation as an invitation to accidents, the 2nd Air Force recently directed that group or squadron commanders be responsible for flights where any instrument carries a "red diagonal."

Where the trouble is mechanical, the group or engineering officer must sign.

The action was intended to insure that when a pilot flies a plane on a diagonal he understands the necessary procedures and precautions to take to overcome the defect in his equipment.

BELLY LANDINGS

Where a pilot, faced with a wheels-up landing, has a choice, should he make it on or off the runway?

Experience has shown that with heavy bombardment aircraft such a landing should be made on the runway. In any type of plane, a runway landing probably will cause less damage to a ship than setting it down on dirt or sod.

The reason is dirt rolls up into balls, fracturing a plane's skin and rupturing the members.

Photographs taken at the specialized four-engine school, Hendricks Field, Fla., graphically display what happens in the two types of landings.

In Figure 1, to the uninitiated it would appear that the pilot had found a nice soft field and brought his plane in with a minimum of damage. (Actually, in this instance, the pilot had no choice due to engine trouble.)

But take a look at Figure 2. Notice how the skin is ruptured. The damage extended from Station 2C to 11 (bomb-bay to tail wheel).

The plane in Figure 3 made a belly landing on the runway at night. Reason: Damaged gear.

The skin, aft of the bomb-bay was unscathed (Figure 4). Nor was the plane's structure damaged. The commanding officer said that in a pinch, the plane could have been made flyable by the next day.

Fear of fire mainly is responsible for a pilot's distaste for a belly landing on the concrete. In combat areas, where a damaged plane might have loose gas aboard due to a punctured tank or broken line, the friction created by a runway landing is a fire hazard. But in the U. S., if the gas system is intact, such fears are largely groundless.

However, a prudent man will get out of any plane that has made an emergency landing under any conditions as quickly as possible. ☆

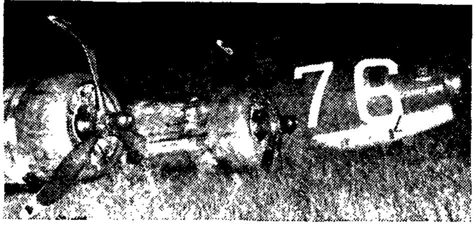


Fig. 1

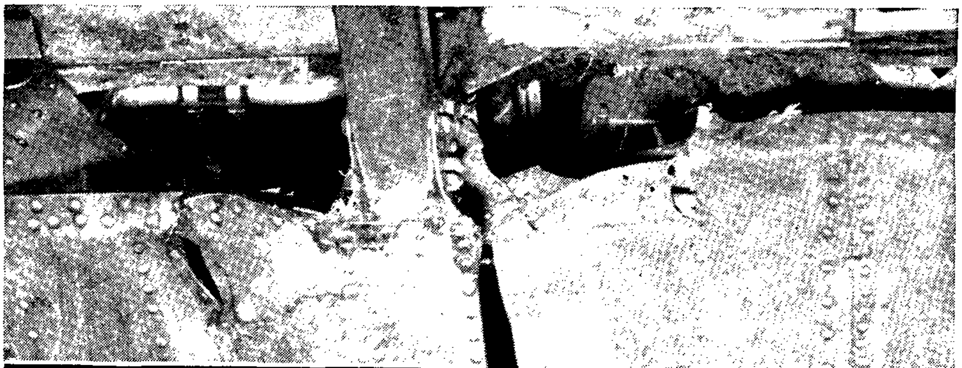


Fig. 2

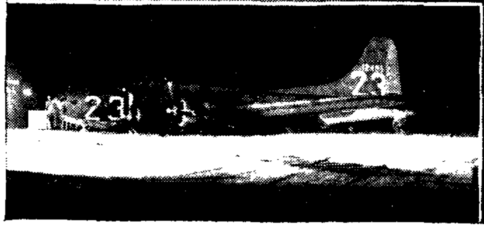


Fig. 3

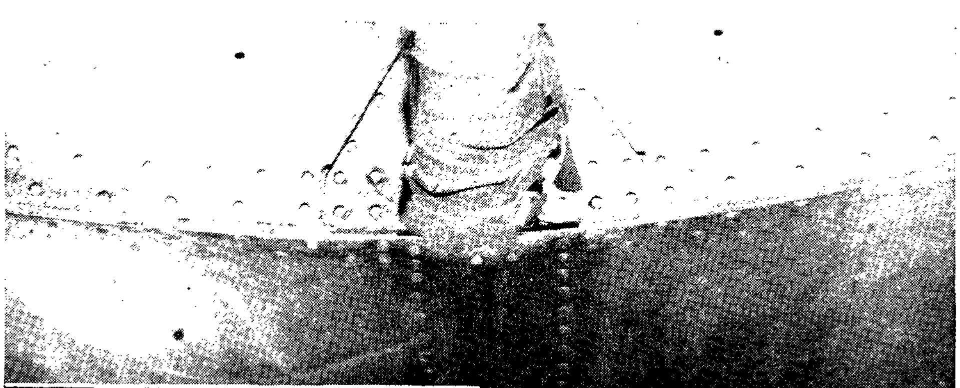


Fig. 4

COMBAT LIFE WITH THE ESCORTS

The boots at the foot of the ladder tell their own story of the respect which this ground crew has for Mr. Dunc of the P-38 Duncs.

Their pilots trained by veterans of the North African and Sicilian campaigns, our P-38s are doing a brisk escort business out of England these days. The success of our bombing attacks has begun to lean heavily on fighter protection—and the men of our fighter groups in England know it. From the time they are briefed for an escort mission (see opposite page) until they bring their planes home, the one concern of our fighter pilots is to help the bombers reach the target and return safely to base. It is reassuring to the bomber crews to know that while they are leveling off for their runs, the fighters are up there knocking off the MEs and FWs.

The first group of Lightnings to fly cover out of England spent some time back in the States flying patrol and interceptor missions in the Washington-Oregon area. The boys found life quite different in Britain. Pictures on these pages tell why.

Until the belly tank came along, fighter protection was extremely limited and the big boys had to shift for themselves when they came into the target area, where the opposition usually was thickest. However, these two cylindrical tanks furnish P-38s with a round trip ticket to most targets.

Flaps and wheels down, a fighter comes home from a mission.

The tail end of a mess line is always a discouraging view to the hungry GI who has rushed off to the noon feed with such high hopes. Only a little "sweating out" will solve the situation.

English weather and English soil beget a muddy terrain that makes boots an indispensable item of equipment.

An English pub lends its friendly, congenial atmosphere to ground crew men who toss down a few ales with the local barkeep.

COMBAT LIFE WITH THE ESCORTS

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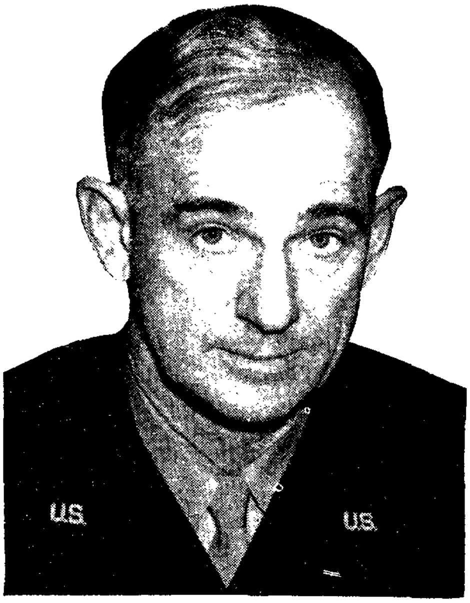


The Author

SERVICING OUR AIR ASSAULT ON EUROPE

By Brig. Gen. Hugh J. Knerr

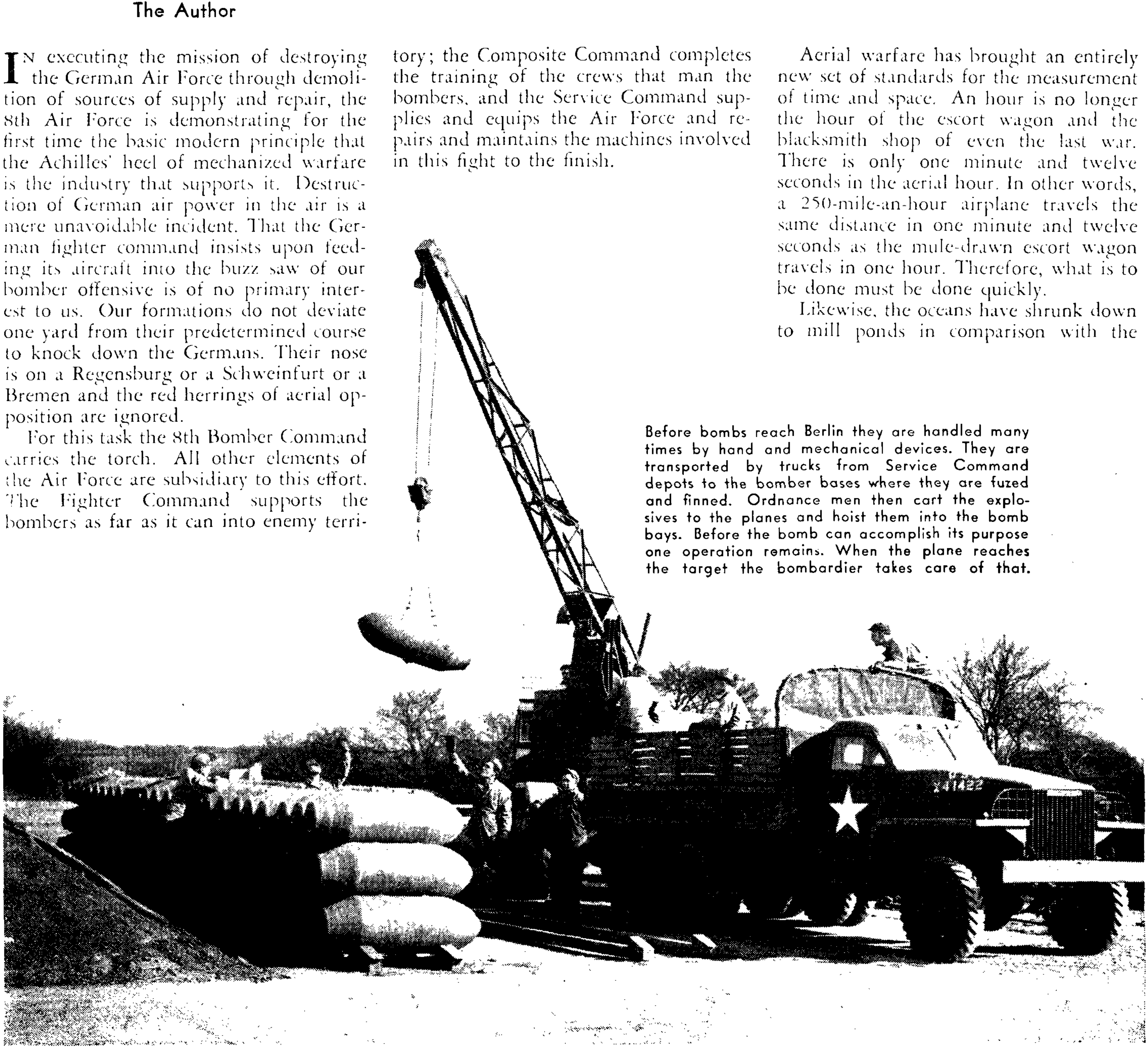
COMMANDING GENERAL, 8TH AIR FORCE SERVICE COMMAND

In executing the mission of destroying the German Air Force through demolition of sources of supply and repair, the 8th Air Force is demonstrating for the first time the basic modern principle that the Achilles' heel of mechanized warfare is the industry that supports it. Destruction of German air power in the air is a mere unavoidable incident. That the German fighter command insists upon feeding its aircraft into the buzz saw of our bomber offensive is of no primary interest to us. Our formations do not deviate one yard from their predetermined course to knock down the Germans. Their nose is on a Regensburg or a Schweinfurt or a Bremen and the red herrings of aerial opposition are ignored.

For this task the 8th Bomber Command carries the torch. All other elements of the Air Force are subsidiary to this effort. The Fighter Command supports the bombers as far as it can into enemy territory; the Composite Command completes the training of the crews that man the bombers, and the Service Command supplies and equips the Air Force and repairs and maintains the machines involved in this fight to the finish.

Aerial warfare has brought an entirely new set of standards for the measurement of time and space. An hour is no longer the hour of the escort wagon and the blacksmith shop of even the last war. There is only one minute and twelve seconds in the aerial hour. In other words, a 250-mile-an-hour airplane travels the same distance in one minute and twelve seconds as the mule-drawn escort wagon travels in one hour. Therefore, what is to be done must be done quickly.

Likewise, the oceans have shrunk down to mill ponds in comparison with the



Before bombs reach Berlin they are handled many times by hand and mechanical devices. They are transported by trucks from Service Command depots to the bomber bases where they are fuzed and finned. Ordnance men then cart the explosives to the planes and hoist them into the bomb bays. Before the bomb can accomplish its purpose one operation remains. When the plane reaches the target the bombardier takes care of that.

Mobile repair units for crashed aircraft, like medical units for injured personnel, follow their planes and make emergency repairs. The 8th Air Service Command maintains units which travel wherever disabled planes have landed. This plane's four engines and ball-turret were damaged in an emergency landing, but the bomber was able to take off from a make-shift runway after the mobile unit had completed the repair job.

oceans of the last war. The battlefields of this war are restricted only by the fact that we can't get off this planet. The space required by the last war is microscopic in comparison.

And yet it has only been within the last year or so that we have put any serious effort into bringing our military management into line with the rules of this new game. In this, the Service Command has not been laggard. Our present organization is a worth while contribution.

THE Service Command is involved in an effort as many-sided as an industrial organization. While our business is aerial, we deal in commodities as prosaic as the peacetime products of General Motors. We have found that we can do our job better with an industrial type of organization rather than the rigid type of military organization. This accounts for the fact that the Service Command has only four main sub-divisions. One deals with men (Personnel Division), the second with materials (Supply Division), the third with machines (Maintenance Division) and the fourth with management (Staff).

The chiefs of these divisions are in fact deputies to the commanding general, with full authority to act on any subject pertinent to their division that is within the framework of basic policies controlled by the commanding general.

The chief of the Personnel Division engages in the reception of newly-arrived Air Force men, their housing, trade classification and distribution to the installations of the 8th Air Force. He maintains rest homes for battle-fatigued personnel and supervises the technical training of the men who maintain the aircraft of the 8th Air Force.

The chief of the Maintenance Division handles all matters concerned with the maintenance of aircraft—their overhaul, repair and reclamation. He directs the modification of aircraft in conformity with the latest in combat experience and supervises the experimental engineering that will keep us a jump ahead of anything the German air force can devise.

The chief of the Supply Division operates a vast mail order house with a stock ranging from rivets to complete aircraft. He procures material from both British and U. S. sources and distributes American products to the RAF as well as the 8th Air Force.

The chief of Administration performs the military function of a chief of staff, and the management function of an industrial manager. He directs the activities of the special staff sections that procure and furnish to the Air Force the supplies not immediately related to the aircraft itself, and the equipment and facilities without which aircraft cannot operate.

There are bombs and ammunition and delicate fuzes to be stocked and to be delivered on time. There are heavy food requirements for a vast Air Force personnel, clothing from ordinary fatigues to electrically-heated flying suits, regular and special medical equipment dictated by the combat experience of one of the world's toughest air theatres. The Air Force necessarily has a huge appetite for radio and signal equipment. With all of its winged machines, the Air Force in the European theatre ordinarily has a greater demand for trucks and for other vehicles than does the Ground Force. There is also the network of airfields, depot installations, storage space and housing facilities to be engineered and maintained.

The Arms and Services involved in executing these ancillary functions include Ordnance, Signal, Quartermaster, Engineer, Chemical Warfare, Surgeon and Transportation. These have been woven into the structure of the 8th Air Force Service Command in such fashion that they are an integral part thereof, along with the specialized functions of the Adjutant General, Judge Advocate, Chaplain, Intelligence, Fiscal Officer and Inspector General.

No theoretical organization can exist in practice unless it works. Ours works because it is based upon the principle of centralized control and decentralized operation. In these days when the course of world history changes within 24 hours through the success or failure of a single air action we have to be light on our feet. Sitting down in this fight would be as fatal as stooping to tie a shoe lace in a prize fight. On October 14, at Schweinfurt, we put over one of our most devastating punches in the face of the heaviest enemy opposition. In five days 56 percent of our battle-damaged airplanes were repaired and back on the line ready to hit them again at Duren.

At another point, policy determined that the overhaul of engines was not keeping pace with the demand for them, so we decided to militarize the base depot. After the uniformed Air Force men took over, the output of overhauled engines jumped thirty percent with less men doing the job. In fact, at the present rate of increase of engine repair, the importation of new engines to the United Kingdom can be decreased. Other examples of increased production through formulation of policies at our headquarters and the decentralization of operations to the field have led to the conclusion that we can soon cut future planned depot area personnel by many thousands and still do a better job.

The fact that we never sit down is revealed in our operation of on-site repair. The boys bring the B-17s back. They don't ditch them in the Channel unless there is nothing left to fly with. When they crash-land them, mobile repair units—complete workshops on wheels, capable of anything up to a major overhaul job—go wherever the planes come to rest. They repair the planes and fly them to a depot where they are made ready for another crack at the enemy.

The rapid pace at which this war rolls along is brought home to us forcibly by the modifications demanded on aircraft when they arrive here. The youngsters doing the fighting are not prima donnas demanding changes in their equipment to gratify a whim. They either live or die because they are better men or have better equipment than their opponent. They discover a weakness here or spot an improvement there that will counter a new fast one put over by some Kraut over Schweinfurt. And they want it tomorrow.

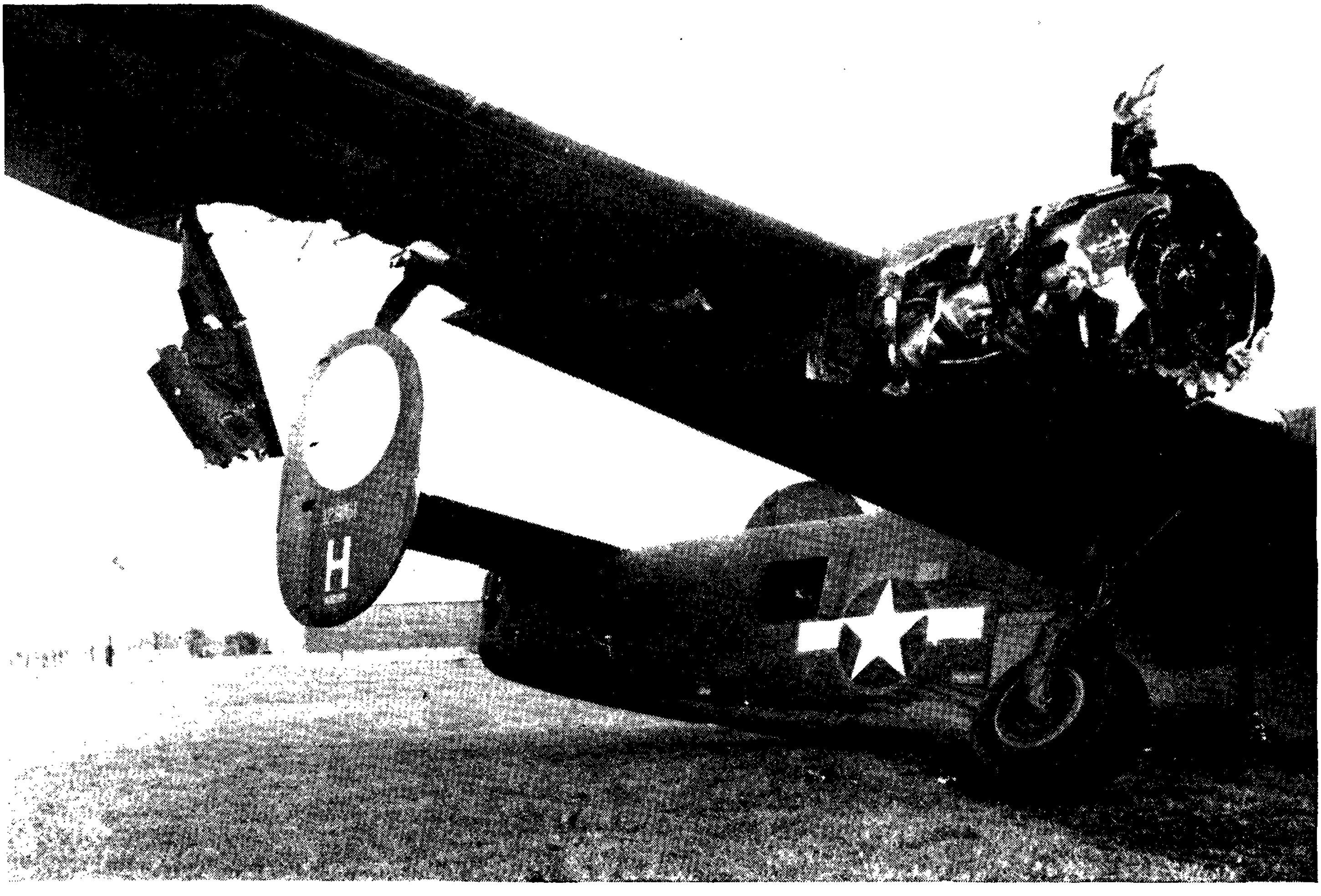
We do our damndest to give it to them but it will be three long months before the factories back home can get it in an aircraft coming off the production line. We fill in that gap by manufacturing kits at one of our base depots and installing them there or at an advanced depot. Imagine trying to route that through a ponderous staff type of organization and you will get a well deserved headache.

Only by controlling the policy upon which modification is based at our headquarters and decentralizing its fabrication and application to the operating depots can we keep up with the insistent demand for more and better equipment.

In all of these operations the difficulties of communications are ever present; the roads are narrow; the skies are cluttered up with clouds and balloons; the telephones are "engaged" and the mails are slow. As a result we must operate our own airline, truck system and teletype network in order to satisfy the insistent demands upon us. By these various means, we transport each month over a distance of 250,000 air miles, a total of 400 tons of cargo, 3,000 military and some civilian personnel, and more than 1,000 ferried aircraft. Overland we accumulate monthly a total of 1,800,000 truck ton-miles. Every ton of bombs, every can of spam and every air crewman must be transported from a port of entry, sea or air, to a destination "Somewhere in England." This, for the Air Forces, is one of our chores.

These and other activities constitute our day's work—days that have no beginning or end; work that furnishes the rumbling background for the power of the 8th Air Force. ☆

ASC inspectors overseas continually examine battle-damaged planes to determine whether they should be repaired, or disassembled and the parts discarded or repaired. When the inspectors mark planes for salvage every usable part is removed, repaired when necessary, and stored in a depot for use on other planes. Even the wings and fuselage are sheared with acetylene torches and the metal sent to processors for salvage.



Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

MEDAL OF HONOR

Morgan, John C., Lieut.
*Sarnoski, Joseph R., Lieut.

DISTINGUISHED SERVICE CROSS

Arooth, Michael, T/Sgt.
Baker, Addison E., Lieut. Col.
Buck, William E., Jr., Lieut. Col.
Cleven, Gale W., Maj.
Gettys, Richard O., S/Sgt.
Le May, Curtis E., Brig. Gen.
Norton, Charles E., Lieut.
Schellin, Roy L., S/Sgt.
Stireman, John O., S/Sgt.
Trout, Chester E., Capt.
Williams, Robert B., Brig. Gen.
Wilson, James W., Maj.
Wood, Jack W., Col.

DISTINGUISHED SERVICE MEDAL

*Gabel, Percival E., Col.
Giles, Benjamin F., Brig. Gen.
Weaver, Walter R., Maj. Gen.

LEGION OF MERIT

House, Edwin J., Maj. Gen.
*Howarth, Loren E., Sgt.

SILVER STAR

Bertram, Joseph L., S/Sgt.
*Chow, Shu Tung, Lieut.
*Johnson, Thomas T., Lieut.
Keith, Troy, Lieut. Col.
King, Charles E., S/Sgt.
Kish, Andrew K., Lieut.
Klasch, John E., T/Sgt.
Klein, Charles A., Lieut.
Koch, Erich J., S/Sgt. (Also AM & 2 OLC)
Kramer, Glenn H., Capt.
Kramp, Joseph J., Capt. (Also AM)
Krizan, John L., T/Sgt. (Also DFC & AM)
Kreuger, William F., M/Sgt. (Also DFC & AM)
Kynett, Martin W., Capt.
Lancaster, James W. Lieut. (Also OLC to PH)
Landers, Gerard Q., Sgt. (Also DFC & AM)
Lane, John H., Lieut.
Lawrence, Dennis W., S/Sgt.
Lawrence, Max E., Sgt.
Lebel, Adrian A., T/Sgt. (Also DFC & AM)
Leidecker, Frank J., Lieut. (Also DFC & AM)
Lopes, Norman R., Sgt.
McGahey, Benjamin C., Lieut.
McKenzie, Lawrence O., Lieut. (Also DFC & AM)
Mahurin, Walker M., Capt. (Also DFC, AM & 3 OLC)
Mangas, John H., Lieut.
Markey, Walter M., Lieut.
Mathis, Peyton S., Jr., Capt.
Merrigan, William J., S/Sgt. (Also DFC & AM)
Mete, Anthony P., S/Sgt.
Miller, William B., Lieut.
Milner, Robert S., Lieut. (Also AM)
Montgomery, Alfred E., T/Sgt. (Also DFC & AM)
Mosley, Albert W., Jr., T/Sgt. (Also DFC & AM)
Myers, Duncan C., Lieut.
Myers, Henry V., Lieut. (Also AM & 2 OLC)
Neeley, Ralph E., S/Sgt. (Also DFC & AM)
Newbury, Edward S. E., Capt.
O'Boyle, James, S/Sgt.
O'Meara, Joseph D., Lieut. (Also DFC & AM)
Orance, Albert, Maj.
Papke, Leonard A., S/Sgt. (Also AM)
*Parrish, George A., Lieut.
Paul, George C., Lieut.
Planck, Carl G., Jr., Lieut.
Portmore, Gilbert S., Lieut.
Postelle, Arnold W., Lieut. (Also DFC, AM & OLC)
Price, Charles T., Lieut. (Also DFC & AM)
Raphel, Eugene V., Capt.
Rasberry, Ottis W., Sgt. (Also DFC & AM)
Ross, Herbert E., Maj. (Also AM & 15 OLC)
*Salitrnik, Robert J., Lieut. *(Also PH, DFC & 3 OLC to AM)
Sederberg, Robert S., Lieut.
Whitmore, Warren B., Lieut. Col.

PURPLE HEART

Ackerman, Harry, Lieut.
Alison, John R., Lieut. Col.
Barrall, Robert W., Lieut.
Bartholomei, Victor H., Lieut.
Blanchette, Milton P., Jr., Lieut. (Also DFC)
Bolles, Harry, Jr., Sgt.
Brasher, Harold C., Lieut. (Also DFC)
De Russey, John H., Lieut. Col.
Dieffenbach, Albert W., Capt.
Farrar, John W., Capt.
Gladhart, David, Lieut.
Hosman, Ralph W., Capt.
Kiser, Raleigh, Sgt. (Also AM)
Larson, Harold B., Lieut. (Also AM)
Lipe, Fort W., Lieut.
Manee, Ferry H., Lieut.
McCoy, Ronald G., Lieut.
Novogrodsky, Nicholas, Cpl.
Olds, Sherwood W., Lieut.
Rodgers, Harvey B., Lieut.
Rotter, Gerald D., Lieut.
Smith, Abbott M., Jr., Lieut.
Storie, John H., Lieut.
Taylor, Robert L., Lieut.
Van Dyke, Stanley M., Lieut.
Wallace, Robert B., Lieut.
Weiemeth, Arlynn E., Lieut.
Whitson, William D., Lieut.

OAK LEAF CLUSTER TO PURPLE HEART

Caird, Almond E. ,T/Sgt.

DISTINGUISHED FLYING CROSS

Adams, John E., S/Sgt.
Allen, Donald S., S/Sgt.
Anders, Virgil M., Lieut.
Anderson, James L., T/Sgt.
Anderson, Karl W., S/Sgt.
Andres, Arthur E., Capt. (Also AM)
Androkovich, Stephen A., T/Sgt.
Anholt, Dean H., S/Sgt.
Ard, Gilbert H., Sgt.
Baker, Jess Francis, Lieut.
Barsh, Phillip W., Sgt.
Bartlett, George H., Lieut.
Battersby, William, Capt.
Bauer, Clarence E., Sgt. (& OLC)
Beck, Richard H., Capt.
Beezley, Wilbur B., Capt.
Berran, Ignatius E., Sgt. (Also AM)
Bing, Andrew J., Capt.
Blend, Clarence K., S/Sgt.
Bloomfield, Thomas F., Lieut.
Bowland, Charles F., Sgt.
Brandt, Norman R., S/Sgt.
Breeding, Marvin L., T/Sgt. (Also AM & OLC)
Breedlove, Richard D., S/Sgt.
Brookhart, Joseph W., Lieut.
Brown, Fred F., T/Sgt.
Bryant, Warren E., Lieut. (& OLC)
Budz, Chester H., Lieut.
Buller, Henry A., Sgt.
Burger, Elmer L., Sgt. (& OLC)
Cardaro, Peter P., S/Sgt.
*Chopping, Robert D., S/Sgt.
*Chorn, Ralph W., Sgt. *(Also AM)
Clark, Walter, Capt.
Collins, James F., Maj.
Da Silva, Francis P., S/Sgt. (Also AM)
Duncan, Cecil E., Lieut.
Dunn, Edward T., Lieut. (Also AM)
Dyess, William E., Lieut. Col. (& OLC)
Hanlon, Melvin F., T/Sgt.
Kennedy, Lawrence C., Capt. (Also AM)
Kilgore, Joe M., Capt. (Also AM)
Kimbell, Charles L., Lieut. (Also AM)
Knox, Grover L., T/Sgt. (Also AM)
Komurke, Joseph C., M/Sgt. (Also AM)
Krantz, Howard L., S/Sgt. (Also AM & OLC)
Kyle, Paul J., Lieut.
Lang, William Alfred, Sgt. (With OLC, AM & 3 OLC)
Larsen, Pernell O., Lieut. (Also AM)
Laurie, John H., Sgt. (Also AM)
Lavender, Jack B., S/Sgt. (Also AM)
Leader, Kent E., Lieut. (Also AM)
Leaman, James H., S/Sgt. (Also AM)
Lefevbre, Armand J., T/Sgt. (Also AM & OLC)
Lindsay, Joseph H., Lieut. (Also AM)
Livingston, John W., Capt.
Long, John F., S/Sgt. (Also AM)
Long, Paul J., Maj. (Also AM & OLC)
Lovelace, William Randolph, Lieut. Col.
Low, Curtis R., Lieut. Col.
Lusk, Virgil W., Lieut. (With 3 OLC, AM & 3 OLC)
Luton, Baxter C., S/Sgt. (Also AM)
McGlynn, Thomas J., S/Sgt. (Also AM)
McJunkins, Keith P., Sgt. (Also AM)
McKain, Karl J., T/Sgt. (Also AM)
McKee, James T., Capt.
McMurray, Robert A., Lieut.
Madsen, Rudolph V., T/Sgt. (Also AM)
Maguire, Leslie L., Jr., Sgt. (Also AM)
Mahboub, Frank W., Sgt. (Also AM)
Makar, Peter, S/Sgt. (Also AM)
Maliszewski, Edward P., Lieut.
Mally, William O., Lieut. (Also AM)
Matthews, Donald E., Lieut.
Mayhew, Wilbur W., Jr., Sgt.
Mears, Frank H., Col.
Medford, John C., Lieut. (Also AM)
Meek, Noel W., T/Sgt. (Also AM)
Mengel, Herbert O., Lieut. (Also AM)
Mickus, Frank J., S/Sgt.
Milam, Fred, Lieut.
Miller, Richard G., Lieut. (Also AM)
Mobbs, George D., Capt. (Also AM & OLC)
Monday, Robert E., S/Sgt. (Also AM)
Monohan, Thomas P., Lieut.
Moore, Johnnie C., T/Sgt. (Also AM)
Moore, William P., Lieut. (With OLC, AM & 3 OLC)
Mooty, Mark T., Capt. (Also AM)
Muehlberg, John R., Capt. (Also AM)
Neal, Charles P., Lieut. (Also AM)
Newsome, Reese W., Sgt. (Also AM)
Nicks, John D., Lieut.
Nye, Francis W., Lieut. (Also AM)
Nye, Lawrence R., Sgt. (Also AM)
Oglesby, Sam R., Capt. (Also AM)
Olds, Thayer S., Col. (Also AM)
Omohundro, Thomas T., Lieut. (Also AM)
Osterhaus, Albert F., S/Sgt. (Also AM)
Parker, Lyn, Jr., Lieut. (Also AM)
Parkhill, Victor G., T/Sgt. (Also AM)
Parkinson, Thomas C., Lieut.
Parr, Earl C., S/Sgt (Also AM & OLC)
Patrick, Anderson T., S/Sgt. (Also AM)
Patrick, Augustus R., Sgt. (Also AM)
Patterson, Cecil E., Jr., Lieut. (Also AM)
Paullin, Robert I., Capt.
Payne, Coy B., S/Sgt. (Also AM)
Peek, Charles O., Lieut. (Also AM)
Pence, Robert E., Lieut.
Pestel, Paul, Lieut. (Also AM)
Peterson, James R., S/Sgt. (Also AM)
Pickett, Eldon P., Sgt. (Also AM)
Pierce, Russel K., Jr. Lieut. (Also AM)
Plavchak, John, Jr., T/Sgt. (Also AM)
Porter, Larry D., Lieut.
Prchal, Louis A., Lieut. (Also AM)
Press, Harry F., Jr., S/Sgt. (Also AM)
Pullium, Lewis E., S/Sgt. (Also AM)
Ransdell, Robert F., S/Sgt.
Rasmussen, Philo O., Maj.
*Treweek, James M., Capt.
Wild, Hugh E., Capt. (& OLC)

OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

McIntyre, Jack C., Lieut.
Puerta, Frank J., Maj.
Rang, Francis B., Capt.
Wuertele, Carl E., Capt.

SOLDIER'S MEDAL

Baker, Edward L., S/Sgt.
Belzowski, Frank J., T/Sgt.
Cowart, Claude J., S/Sgt. (& OLC)
Dailey, Andrew E., Sgt.
Johnstone, James, Sgt.
McMillen, William J., Sgt.
Miller, William R., Sgt.
Otto, Stanford J., Lieut.
Rockafellow, Alfred A., S/Sgt.
Simoneau, Wilfred J., T/Sgt.
Steiner, Charles V., Lieut.
Williams, Grover C., Jr., S/Sgt.

AIR MEDAL

Abelson, Sidney, S/Sgt.
Abraham, George M., S/Sgt. (& 2 OLC)
Abram, Robert V., Lieut.
Ackridge, Leo C., Sgt.
Aiello, Richard V., T/Sgt.
Allen, Brooke, E., Col.
Amos, Lee H., T/Sgt. (& 3 OLC)
Anderson, Frederick L., Jr., Brig. Gen.
Anderson, James E., S/Sgt.
Anderson, Norman C., T/Sgt.
Andresen, Malcolm K., Lieut. (& 9 OLC)
Andrychowski, Bernard J., T/Sgt.
Antonio, Basil J., Lieut. (& 3 OLC)
Archer, William E., Lieut.
Ashe, George M., S/Sgt.
Asher, John G., S/Sgt.
Atkins, James L., Jr., Capt.
Atkinson, Philip E., Lieut.
Auman, Rictor H., Lieut. (& 3 OLC)
Bachelle, Stuart, Lieut.
Bachman, Franklyn, Lieut.
Baguley, Raymond, Lieut.
Baird, James D., Lieut.
Baity, Ray H., Jr., S/Sgt. (& 3 OLC)
Baker, Ross C., Lieut.
Baldwin, Irl E., Capt. (& 3 OLC)
Barnes, Charles G., Sgt. (& OLC)
Barnes, John T., T/Sgt.
Barnett, Clyde H., Jr., Lieut.
Barsam, Meran A., Jr., Lieut.
Bartlett, Frank W., S/Sgt. (& 2 OLC)
Bass, Paul L., T/Sgt.
Bator, Stanley J., Jr., S/Sgt.
Battersby, William, Capt. (& OLC)
Bauley, James E., Lieut.
Beahan, Kermit King, Lieut. (& 3 OLC)
Bean, Joe M., Lieut.
Beatty, John J., Jr., Cpl. (& 2 OLC)
Beck, Joseph A., II, Lieut.
Bell, John R., Lieut. (& OLC)
Bennett, Osee V., S/Sgt. (& OLC)
Bercu, Robert A., Lieut.
*Bevlock, James J., Capt.
Biehn, Carl M., M/Sgt.
Billotte, John P., T/Sgt. (& 3 OLC)
Binder, Ray J., Capt.
Binowetz, Melvin, Lieut.
Bise, Dalmas F., S/Sgt.
Blaida, Paul A., Lieut. (& 6 OLC)
Blakesmith, Bassell, Lieut.
Blanton, Thadd H., Capt.
Blasic, Walter P., Sgt.
Bloomhuff, John E., Lieut.
Boggess, William V., Lieut.
Bone, Donald R., Lieut. (& 3 OLC)
Boone, Daniel M., S/Sgt.
Boreen, Glenn W., T/Sgt. (& 3 OLC)
Bornhiemer, E. J., Sgt.
Boswell, Hilroy M., T/Sgt.
Bott, Robert N., Lieut.
Bourgeois, Robert C., M/Sgt.
Bowar, Carlos L., Lieut.
Boyle, Francis H., T/Sgt.
Brady, John M., S/Sgt.
Bragdon, Oren D., Lieut.
Bram, Denny E., Lieut.
Branch, Henry, II, Lieut.
Branch, Peter W., Lieut. (& 2 OLC)
Brandkamp, Charles H., Lieut.
Brant, Donald W., S/Sgt.
Brehm, William J., Lieut.
Brennan, John G., Lieut.
Bridenbaugh, Joseph R., Lieut.
Briggs, James D., Capt.
Brighton, Kenneth A., Lieut.
Brill, Allen, Lieut. (& 2 OLC)
Britt, James O., Lieut. (& 2 OLC)
Brogan, Robert C., Capt.
Broman, Theodore H., Lieut. (& 4 OLC)
Brouhard, Lawrence H., Sgt.
Brown, Charles S., Lieut.
Brown, James S., Lieut.
Brown, Robert I., Lieut. (& 3 OLC)
Brown, Wilbur E., S/Sgt.
Brozack, Nicholas T., T/Sgt. (& OLC)
Bruner, Marshall T., S/Sgt.
Buckey, George R., Capt. (& 2 OLC)
Bullock, Charles R., Lieut.
Bumgarner, Carl T., Capt.
Bunch, James B., S/Sgt.
Burger, Arthur L., Lieut.
Burnett, Andrew H., Sgt.
Burnett, John D., Lieut.
Burns, Robert H., Sgt.
Bush, Ralph, Cpl.
Buskey, Douglas H., Capt.
Callery, Philip J., S/Sgt. (& OLC)
Campbell, William C., Lieut.
Caraday, Alva L., Sgt.
Carlisle, Robert H., S/Sgt.
Carlton, Robert N., Lieut. (& 3 OLC)
Carnathan, Hollis E., Jr., T/Sgt.
Carpenter, Warren A., Lieut.
Carr, Raymond O., Lieut.
Carroll, Richard J., Lieut. (& OLC)
Carter, Charles M., Lieut. (& 3 OLC)

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* Posthumous

Carter, John F., Lieut.
Castle, Robert D., T/Sgt.
Cates, Vernon C., S/Sgt.
Caton, James B., S/Sgt.
Caukin, Roger L., Lieut.
Cendretto, John J., T/Sgt. (& OLC)
Chamberlain, Lloyd H., S/Sgt.
Chapman, Arney F., Cpl.
Chastain, Alfred E., Sgt.
Cheek, Walter V., T/Sgt.
Childress, Peter M., Lieut.
Chiles, John W., Capt.
Chin, Ree, Lieut.
Clark, Thomas W., Maj. (& OLC)
Clawson, Paul D., T/Sgt.
Coats, Robert D., Sgt.
Cochran, Ivan E., Sgt.
Cochran, Wharton C., Lieut.
Cohen, Schiller, Sgt. (& OLC)
Cole, Robert W., Sgt. (& 2 OLC)
Coleman, Ralph E., T/Sgt.
Cook, Bud W., T/Sgt.
Cooke, Henry, T/Sgt.
Cooper, Irving, Lieut.
Cormier, Lionel J., Lieut. (& 2 OLC)
Costello, Edward A., Lieut.
Couch, Robert E., Sgt. (& OLC)
Couturier, Alfred J., T/Sgt.
Cox, Hollis D., Sgt.
Crain, Richard T., T/Sgt.
Cram, Philip, Lieut.
Cram, Reginald M., Maj.
Cranman, Arthur H., Lieut.
Crause, Leo D., Lieut.
Crawford, William, Jr., Lieut. (& OLC)
Crockett, Allan A., Maj.
Crow, Howard B., Sgt.
Cuddeback, Aaron E., Lieut.
Cummings, Claude H., Jr., Lieut.
Cunningham, Bennie B., Sgt. (& 3 OLC)
Cunningham, Joseph R., Lieut.
Cunningham, Lee O., Lieut.
Curb, Cyril E., S/Sgt.
Currie, John, Sgt.
Cypress, Mandell L., Lieut. (& OLC)
Damann, Carl G., Lieut.

Groff, George E., Lieut.
Grothaus, Robert J., Lieut. (& 3 OLC)
Hafner, William M., Lieut.
Hall, Allan W., Sgt. (& 2 OLC)
Hall, James G., Lieut. Col.
Halloran, Francis A., M/Sgt.
Hannah, William W., Lieut. (& OLC)
Hanson, Robert J., T/Sgt. (& 3 OLC)
Harden, Dixie R., S/Sgt.
Hardin, William G., Jr., S/Sgt.
Harlow, Henry M., Capt.
Harris, Ray E., Lieut.
Harrison, James A., S/Sgt. (& 2 OLC)
Hartbrodt, Frederick A. V., Capt.
Hatfield, Albert S., T/Sgt.
Hatt, Edward, S/Sgt.
Haupt, Fred J., F/O (& 11 OLC)
Hawk, Leonard F., S/Sgt.
*Hawke, Thomas C., Lieut. (& 6 OLC)
Hayes, Frank, Sgt. (& 3 OLC)
Haygreen, Paul W., S/Sgt. (& 3 OLC)
Heaton, Donald H., Lieut.
Heckman, Willard L., Lieut. (& 3 OLC)
Heinrich, Lewis A., S/Sgt.
Henderson, Winthrop C., Lieut.
Hennin, Phillip F., Maj.
Herndon, Joseph T., Lieut.
Heskew, Wayne R., S/Sgt.
Higgins, Wellington H., Lieut.
Hill, Robert A., Jr., Lieut.
Hiner, Warren J., Lieut.
Hoelle, William J., Lieut. (& 3 OLC)
Hohman, Jack, F/O (& 13 OLC)
Hokenstad, Theodore R., Lieut. (& OLC)
Holloway, Lee C., Capt.
*Homes, George P., Sgt. (& 4 OLC)
Honczaryk, Peter G., S/Sgt.
Hopper, Richard R., Lieut.
House, Kenneth L., Sgt.
House, Rodney W., Lieut.
Hou, Yuan, Lieut.
Howe, Phillip, S/Sgt.
Hunley, Charles L., M/Sgt.
Hyde, Elbert W., Lieut.
Irish, Robert A., T/Sgt. (& OLC)
*Ivanhoff, William M., Sgt. (& OLC)

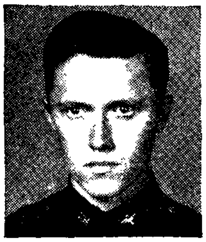
Leikness, Marlow J., Lieut. (& 13 OLC)
Lindley, Stephen H., Lieut. (& 3 OLC)
Littlejohn, Rogers D., Lieut.
Littleton, Joe, Lieut.
Loch, Harold P., T/Sgt. (& 3 OLC)
Locker, H. M., Lieut. (& 2 OLC)
Lomax, Melvin, Sgt.
Lorence, William A., Capt.
Love, Earl L., Sgt. (& 3 OLC)
Lovelace, John Wade, Lieut.
Luciana, Albert, S/Sgt.
Luhrsen, Vernon G., S/Sgt.
Lundby, Roland O., Capt. (& 2 OLC)
Lynn, John A., Sgt. (& 3 OLC)
MacCubbin, Emmet C., Capt.
MacDonald, Anderson A., Sgt. (& 2 OLC)
MacDonald, Henry G., Capt. (& OLC)
MacNutt, Frederick A., Jr., Lieut.
McAnnely, Edwin C., Lieut.
McArtor, John L., S/Sgt. (& OLC)
McCinnell, Charles H., Lieut.
McCleelan, Wilbut A., T/Sgt.
McClintock, William F., Lieut. (& 3 OLC)
McColgin, Franklin H., Capt.
McCombs, Robert L., Pvt.
McCombs, William J., Lieut.
McComsey, Robert M., Lieut.
McCorkle, John P., Sgt.
McCoun, Gordon K., Lieut. (& OLC)
McEnany, Bernard P., T/Sgt.
McGinnis, Earl Carroll, Sgt. (& 3 OLC)
McIlheran, Robert C., Maj.
McKenna, John G., T/Sgt. (& OLC)
McKnight, Louis S., Lieut. (& 2 OLC)
McNally, Harvey J., S/Sgt. (& OLC)
Mackley, John R., Sgt.
Madison, Wilard R., Pfc.
Magee, Alan E., S/Sgt.
Magnis, Barney, Sgt.
Mahoney, Frederick T., Capt.
Mahoney, Hugh, Lieut.
Maier, Walter, Sgt. (& 3 OLC)
Malizeski, Chester J., T/Sgt. (& 3 OLC)
Mallett, Frank, Sgt. (& 3 OLC)
Malone, Maurice C., Sgt. (& 3 OLC)
Manlove, Wayne M., Lieut. (& 12 OLC)

Natiello, Oreste G., Sgt.
Naydock, Samuel, Sgt. (& 3 OLC)
Nee, Don D., Lieut. (& OLC)
Neely, Eber J., Jr., S/Sgt.
Nelson, Vernon, Pvt. (& 4 OLC)
Nesterowicz, Edmund F., S/Sgt.
Nestman, Howard E., Sgt. (& 2 OLC)
Newhart, Joseph A., Sgt. (& 2 OLC)
Newman, Albert G., Cpl.
*Nichols, Clarence B., Sgt. (& OLC)
Nichols, John C., Lieut. (& OLC)
Nichols, Robert J., Sgt. (& 3 OLC)
Nix, Foreman, Cpl.
Noble, Charles M., T/Sgt. (& OLC)
Noel, Milton A., Sgt. (& 3 OLC)
North, Charles A., Lieut.
Norwood, Feaster A., Lieut.
Nuessle, Harry C., Lieut. (& 3 OLC)
Nunlist, Paul F., Lieut.
O'Brien, James J., Sgt. (& OLC)
Odell, Donn C., Lieut.
Olmstead, Jesse N., Pfc.
Olsen, Edward, S/Sgt.
Onorato, Joseph B., Lieut.
Ordille, James A., Lieut.
Orlando, Dominic S., S/Sgt.
Orr, Jim M., Sgt.
Osbourne, Glenn C., Lieut.
Otto, Robert F., S/Sgt.
Park, Kenneth B., S/Sgt.
Parker, David A., Lieut.
Patterson, Robert G., Lieut. (& OLC)
Patterson, Wallace A., Lieut. (& OLC)
Peaslee, Jesse C., Maj.
Pendergrass, Hugh, Sgt.
Penland, D. L., T/Sgt.
Perkins, Homer W., S/Sgt. (& 2 OLC)
Perry, Edward W., S/Sgt.
Peterson, David R., Lieut. (& 2 OLC)
Peterson, Lamar C., Lieut.
Peterson, William P., Cpl.
Pett, David, Lieut. (& OLC)
Phillips, Russell A., Lieut. (& 2 OLC)
Piotrowski, Edward P., S/Sgt. (& 13 OLC)
Pittard, John T., S/Sgt.
Platt, Alvar B., Sgt.

S/Sgt. W. D. Deringer

Capt. Don A. Johnson

Maj. Rudolph E. Flack


Lt. R. L. Vincent

Capt. A. B. Hughes, Jr.

Capt. J. W. Farrar

Davis, Harlan G., S/Sgt.
Dawson, Paul E., Lieut. (& OLC)
Del Signore, Henry L., T/Sgt.
Delucia, Angelo P., Cpl.
Deringer, William D., Jr., S/Sgt.
Dietz, Edward R., S/Sgt.
Dinke, Charles R., Lieut.
Doak, Alvah A., Sgt.
Dominy, John T., S/Sgt.
Dority, Guy E., Sgt. (& 3 OLC)
Drillas, Christopher A., Sgt.
Duckworth, Melvin H., S/Sgt.
Dufour, John, Maj. (& OLC)
Durham, Joseph E., Lieut.
Eagle, Buren O., T/Sgt.
Eaton, Dudley Paul, Lieut. (& 3 OLC)
Edwards, Fred W., Lieut.
Elliott, Jack C., Sgt. (& 2 OLC)
Emrich, Herbert B., Lieut.
Engel, Godfrey, Jr., Lieut. (& 3 OLC)
Eshelman, Dean H., Maj.
Esmay, Carle H., Lieut. (& 2 OLC)
Evans, Eugene H., Sgt. (& OLC)
Evans, Vincent, Lieut. (& 3 OLC)
Eyster, Ercil F., Lieut. (& 2 OLC)
Fahrland, Robert R., Lieut.
Farmer, Joseph E., T/Sgt.
Feay, Marc E., S/Sgt.
Feist, Edwin L., Lieut.
Ferguson, James M., Lieut. (& OLC)
Ferree, Ralph J., Lieut.
Field, Edwin J., Lieut. (& OLC)
Filley, Oliver D., Jr., Lieut. (& OLC)
Fischer, Henry A., Jr., Lieut.
Fisher, Albert S., T/Sgt.
Fitzpatrick, Robert L., Cpl.
Fletcher, Basil E., M/Sgt.
Flowers, James D., Jr., Lieut.
Fogleman, Coin C., Jr., Sgt. (& 3 OLC)
Ford, Carey B., S/Sgt.
Foster, Charles L., Capt. (& OLC)
Foster, Leo J., Jr., Maj.
Fox, Leonard M., T/Sgt.
Frederick, George W., Lieut. (& 2 OLC)
Freeman, George J., S/Sgt.
Freese, Lewis C., S/Sgt.
Friermood, Max J., Lieut.
*Fuller, Rogert W., Lieut. (& 3 OLC)
Fuller, Walter B., S/Sgt.
Galloway, Paul A., Sgt. (& 2 OLC)
Gates, Edmund, Jr., S/Sgt. (& OLC)
Gazo, Albert A., S/Sgt.
Gentile, Don S., Lieut. (& OLC)
Gerry, Clark H., Lieut.
Giammara, Joseph A., Cpl.
Gisel, Clarence P., Lieut.
Goolsby, Fleming C., Lieut. (& 2 OLC)
Gover, Leroy, Capt. (& OLC)
Grabowski, Frank W., Sgt. (& OLC)
Graf, Robert F., Cpl.
Gray, Wayne J., S/Sgt. (& OLC)
Gregory, Lewis H., Lieut. (& 3 OLC)
Griffith, John H., Lieut.

Ives, Eric B., S/Sgt.
Jackson, Emil I., S/Sgt.
Jackson, Glenn Luther, Lieut. (& 3 OLC)
Jaegers, Robert A., Lieut.
James, Jefferson M., S/Sgt.
James, Joe C., Sgt. (& 2 OLC)
James, Ray A., Sgt. (& 2 OLC)
Janette, Raymond M., S/Sgt.
Jennings, Charles F., Lieut.
Jent, William T., S/Sgt.
Jeter, Charles H., Maj.
Jobe, Fletcher H., Lieut.
Johnson, David W., Capt. (& 2 OLC)
Johnson, Don A., Capt. (& OLC)
Jones, Charles H., T/Sgt.
Jones, James F., T/Sgt. (& OLC)
Jones, Robert T., Lieut.
Jones, S. J., Cpl.
Junget, George W., Sgt.
Kaszubski, Edward A., T/Sgt.
Kayhoe, William F., Capt.
Kehoe, James Grant, T/Sgt.
Kelly, Van C., Jr., S/Sgt.
Kendrick, George E., S/Sgt.
Ketch, William H., Jr., S/Sgt. (& OLC)
Kile, Lavelle, S/Sgt.
Kirkpatrick, George B., S/Sgt.
Klee, John P., S/Sgt.
Klester, Alexander A., S/Sgt.
Knifton, Thomas O., M/Sgt. (& 3 OLC)
Knott, Carroll S., Lieut. (& 12 OLC)
*Koch, Walter, T/Sgt. (& 2 OLC)
Koehler, Gilbert L., S/Sgt.
Kramer, Robert F., S/Sgt.
Krapcha, Edward L., Sgt.
Krasevac, Albert L., Sgt.
Kreidler, James F., Lieut. (& 2 OLC)
Kuk, John, Cpl.
Kulakoski, Alvin John, Sgt. (& 3 OLC)
Kusowski, Thaddeus F., S/Sgt. (& 2 OLC)
Lach, Waldemar J., Lieut. (& 2 OLC)
Laclair, Thomas J., S/Sgt.
Lahmers, Donald E., T/Sgt.
Laite, Frederick R., Sgt. (& 3 OLC)
Lammers, Robert, T/Sgt. (& 3 OLC)
La Mondola, Joseph J., Pfc.
Landers, John D., Lieut.
Lange, Donald E., Capt.
Langley, Clifford R., Sgt.
Lanzo, Philip A., Lieut.
Laplant, William P., Sgt.
Laretsky, Alexander, Cpl.
Lasseter, Wilbur H., Capt.
Lavin, John N., Capt.
Lawrence, Albert L., Sgt.
Lawrence, Claude H., Lieut. (& 2 OLC)
Leaman, Alton D., Sgt.
Learned, Harold G., Jr., Lieut.
Leasor, Keith R., S/Sgt.
Ledford, William B., T/Sgt.
Leffingwell, Claude V., Lieut.
Lehti, Robert W., Capt.
Leighton, Charles B., Capt. (& 3 OLC)

Maraschiello, Sebastian, S/Sgt. (& OLC)
Marchese, Francis T., S/Sgt. (& OLC)
Maresh, Theodore J., Capt.
Marrer, Robert E., T/Sgt. (& OLC)
Marsh, Edmund W., Lieut.
Martensen, William B., Lieut.
Martin, Calvin, S/Sgt.
Martin, Donald A., Sgt. (& 3 OLC)
Martin, Donald O., S/Sgt. (& OLC)
Martin, George K., S/Sgt.
Martin, John J., Cpl.
Matheis, Stuart J., Lieut.
Matt, Charles W., Lieut.
Matthews, Milton F., S/Sgt.
Maxwell, Arthur L., Lieut. (& OLC)
Maxwell, Raymond A., Sgt.
*Mayes, John Bernard, Lieut. (& OLC)
Mayne, William B., Pvt.
Mekler, Jacob A., Sgt. (& 2 OLC)
Melvin, Miles W., Sgt. (& 3 OLC)
Meneely, Harold, S/Sgt.
Merrell, Clinton P., T/Sgt.
Messina, John J., T/Sgt.
Meyers, Kermit E., Capt.
Meyers, Robert H., Lieut.
Mika, Henry E., T/Sgt. (& 2 OLC)
Millard, Thomas L., T/Sgt.
Miller, Charles J., Pvt.
Miller, Marshall W., S/Sgt. (& 2 OLC)
Miller, Ralph V., Lieut.
Milliren, James R., S/Sgt.
*Mills, Robert W., Sgt. (& 5 OLC)
Milstead, James C., Sgt.
Minton, Lewis T., T/Sgt.
Mitchell, John H., S/Sgt. (& 3 OLC)
Mitchell, Robert A., Jr., Lieut. (& 2 OLC)
Mitchell, Robert H., Lieut. (& 2 OLC)
Moffatt, Robert J., Lieut. (& 2 OLC)
Monda, George E., Lieut. (& OLC)
Moore, Burton L., Lieut.
Moore, Raymond T., T/Sgt. (& 2 OLC)
Moore, Robert L., Sgt.
Moose, Robert A., Lieut.
Moran, Frederic S., T/Sgt.
Morgan, Ray, Lieut.
Morgan, Raymond D., S/Sgt.
Morgan, Wilbur E., S/Sgt.
Morris, Herbert A., Lieut.
Morris, Thomas J., Jr., Capt. (& 3 OLC)
Morrissey, Robert L., Lieut. Col.
Morrison, Thomas H., Sgt.
Morton, Daniel F., Jr., T/Sgt.
Moser, Roy R., Lieut.
Moses, Samuel, S/Sgt.
Mostow, Jechiel, Sgt. (& 3 OLC)
Moszyk, Aloysius L., Sgt. (& 2 OLC)
Mulgrew, William C., S/Sgt. (& OLC)
Murfit, Richard J., Capt. (& 2 OLC)
Murphree, Clyde E., Lieut.
Murray, Lawrence W., T/Sgt.
Murray, Robert A., T/Sgt.
Muscato, James T., T/Sgt.
Nastal, Casimer A., S/Sgt. (& 3 OLC)

Polifka, Karl L., Maj.
Poncik, Victor J., Lieut.
Poole, Edgar T., Lieut.
Potter, Richard E., Lieut. (& OLC)
Powell, Thomas Herman, Lieut. (& 3 OLC)
Prestidge, Howard F., Cpl.
Preston, William F., Jr., Lieut.
Priester, Robert I., Lieut. (& 2 OLC)
Pucilowski, George A., Lieut. (& 3 OLC)
Pugliese, Vito, Sgt. (& OLC)
Puleo, Frank, S/Sgt.
Pullen, James F., Lieut.
Pulley, Isaac H., Jr., Pfc. (& OLC)
Pulliam, Harold K., Lieut. (& OLC)
Pyle, Clifton, Capt. (& 3 OLC)
Quackenbush, Mathias J., Lieut.
Quinlan, John P., S/Sgt. (& 3 OLC)
Radetsky, Harold A., Lieut. (& 3 OLC)
Rasmussen, James H. S., Capt.
Reitman, Michael L., Lieut. (& OLC)
Rembt, William E., Sgt.
Richardson, Donard R., M/Sgt. (& 2 OLC)
Riley, Earl F., Lieut. (& OLC)
Rogers, Tom P., S/Sgt.
Romig, Eugene A., Maj. (& OLC)
Ross, James R., Lieut.
Rounds, Gerald L., Lieut. (& 13 OLC)
Rudder, Carl F., Maj. (& 12 OLC)
Ruiz, Ernest C., Lieut.
Rush, Eddie P., Sgt.
Sanders, Lyman A., Jr., Lieut.
Sanders, Richard C., Col.
Scalpone, Joe D., Capt. (& 5 OLC)
Schauer, Louis A., Lieut.
Shaw, William D., Lieut.
Scherr, Jerome A., T/Sgt. (& 11 OLC)
Schleeh, Russell E., Capt. (& 3 OLC)
Schnier, Robert F., Lieut.
Schrom, James R., Lieut.
Scigliano, Frank J., Sgt.
Seeley, Harvey M., Lieut.
Sells, William D., Lieut.
Sharpe, Allen A., Sgt. (& OLC)
Shelton, Charles E., Maj.
Shoup, James F., T/Sgt.
Smith, Carl G., Lieut.
Smith, George P., T/Sgt.
Smith, Max E., Lieut. (& OLC)
Smith, Roy Q., T/Sgt. (& 3 OLC)
Sparger, Henry M., Lieut.
Spear, Peter H., Lieut.
Steininger, Albert F., S/Sgt.
Stephen, Willard W., S/Sgt. (& 3 OLC)
Stephens, Roger W., T/Sgt.
Stevens, Milton A., T/Sgt. (& 3 OLC)
Stokes, Robert E., Jr., Cpl.
Storer, Charles B., S/Sgt. (& OLC)
Stouse, Harold L., Capt. (& 2 OLC)
Straus, John, S/Sgt.
Stream, Charles T., S/Sgt. (& 11 OLC)

(Continued on next page)

Lt. Joseph Sarnoski

Capt. W. E. Jacobs

Lt. Andrew Kundrat

Lt. Edwin J. Field

Lt. P. V. Williams

Brig. Gen. B. F. Giles

Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

Strickland, Joseph M., Capt. (& 2 OLC)
Stupka, Raymond J., M/Sgt.
Suchs, Ray G., Lieut. (& OLC)
Sullivan, James F., Jr., Lieut.
Sykes, Victor G., Sgt.
Sylvester, Robert B., M/Sgt.
Taibl, Howard A., S/Sgt.
Talbot, Thomas J., Lieut.
Tappan, Robert E., Lieut.
Tedford, Thomas E., S/Sgt.
*Teinowitz, Norman P., T/Sgt. (& 3 OLC)
Terry, Derwin D., S/Sgt.
Terwilliger, Paul E., Lieut.
Thomas, Henry M., Cpl.
Thorpe, Gordon Albert, Sgt. (& 3 OLC)
Thurston, Bernays K., Lieut. (& 2 OLC)
Toluse, Joseph A., T/Sgt.
Tressel, Robert E., Lieut.
Tupper, Therson S., T/Sgt. (& 3 OLC)
Van Hoose, Leigh, S/Sgt.
Varn, William C., T/Sgt.
Veith, Pierce L., Lieut. (& OLC)
Vlahakes, Peter L., Lieut.
Wachs, Vincent F., S/Sgt.
Waits, Oscar L., T/Sgt.
Wall, Hardy A., Cpl.
Walsh, James H., Col.
Warminski, Zygmund C., S/Sgt. (& OLC)
Weaver, Sam E., T/Sgt.
Weinfurther, Regis D., Sgt.
Werner, Crowell B., Lieut. (& OLC)
West, Leonard A., Lieut.
Wichner, Glen O., S/Sgt.
Wilder, Donald M., Lieut.
Willard, Harlow E., Capt. (& OLC)
Williams, Paul V., Lieut. (& 3 OLC)
Williams, Robert L., Lieut.
Wilson, John B., Capt.
Witt, Macon B., S/Sgt.
Wolfe, Merritt C., Lieut.
Wright, James Smith, Capt. (& OLC)
Wu Chu, Lieut.
Yakinovicz, Frank G., T/Sgt.
Yarbrough, Daniel E., Lieut. (& OLC)
Youngblood, Rufus W., Sgt.
Zehrer, Carl J., T/Sgt.

OAK LEAF CLUSTER TO AIR MEDAL

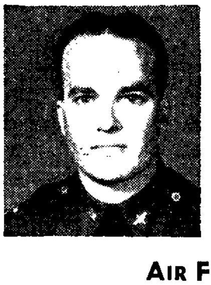
Adams, William B., Lieut. (3rd)
Agee, James R., Sgt. (4th)
Alexander, Ralph, S/Sgt.
Alifano, Elmer J., S/Sgt.
Allen, Chester M., Sgt.
Anderson, Roland V., Sgt. (3rd)
Anesi, Roy J., T/Sgt.
Applee, Frank H., S/Sgt. (3rd)
Ascol, Holiel, S/Sgt.
Auger, Clifford M., Pvt.
Austin, Wayne F., S/Sgt.
Avdevich, Fillmore, Lieut.
Baker, Francis W., T/Sgt.
Baker, William E., S/Sgt. (3rd)
Baldassare, Walter E., Sgt.
Bargdill, Donald C., Sgt.
Barnes, Cecil G., Sgt.
Barnes, Charley, Sgt.
Barnes, Roger T., S/Sgt. (3rd)
Barton, James D., S/Sgt.
Batterson, Frank L., S/Sgt.
Baur, Jack C., Lieut.
Beane, Walter O., Jr., Lieut.
Bearden, R. T., S/Sgt.
Beckham, William A., Sgt.
Behr, Thomas S., Lieut.
Benham, Lenwood E., Pfc.
Bennett, Alexander S., S/Sgt.
Benson, Bernard E., Lieut. (2nd)
Benson, Kennedy, B., Capt. (2nd)
Bertsch, Forest W., S/Sgt. (3rd)
Bickett, George L., Jr., Sgt.
Billman, Robert J., T/Sgt.
Bixby, Carl, Sgt.
Blair, Alfred D., Lieut. (2nd)
Blair, Floyd R., Sgt. (2nd)
Blakeslee, Donald J. M., Maj. (3rd)
Blue, Maxwell A., Sgt. (4th)
Bober, Nick, Sgt. (3rd)
Bobinski, Henry P., Sgt. (2nd)
Bolle, Norman N. V., Lieut. (2nd)
Borostowski, Benedict B., T/Sgt. (3rd)
Boucher, Raymond, Gerald, Sgt. (3rd)
Boughton, Edwin M., Lieut. (5th)
Boyte, George Bryan, S/Sgt.
Bradford, William B., S/Sgt.
Bragg, Kendrick R., Jr., Lieut. (4th)
Braun, George T., S/Sgt.
Broadwell, Walter J., Capt. (2nd)
Brock, John Q., Pfc.
Browe, Robert E., Sgt. (3rd)
Brown, Addison L., Lieut. (2nd)
Brown, George R., S/Sgt.
Brown, Richard C., Lieut. (2nd)
Brown, Therman D., Capt.
Brown, Vance, S/Sgt.
Brum, Herbert L., T/Sgt. (2nd)
Brunnell, George A., S/Sgt.
Bryant, Norman, Lieut. (3rd)
Bull, Charlie, Lieut.
Bullard, Nolan K., T/Sgt. (2nd)
Burchard, Eugene, Pfc.
Burger, John R., Lieut.
Burkholder, Lloyd A., Sgt. (3rd)
Bush, Edwin R., Lieut. (2nd)
Butler, William E., T/Sgt. (3rd)
Byrne, Joseph J., S/Sgt.
Carignan, Richard C., S/Sgt. (3rd)
Carr, Joseph P., Lieut. (3rd)
Carter, Joseph W., Capt. (2nd)
Casey, William J., Capt. (3rd)
Castellotti, Julio G., S/Sgt.
Champion, John Homer, Lieut. (2nd)
Chapel, Norva C., Cpl. (2nd)
Chappell, Eldon A., Lieut.
Chenoweth, Robert N., Lieut.
Chrisler, Charles W., Jr., Lieut.
Christmas, Charles, Capt. (2nd)
Clark, Ernest B., Sgt. (3rd)
Clark, James A., Lieut.
Clark, James C., T/Sgt.
Clarke, Howard A., S/Sgt. (9th)
Cliburn, Charles, Lieut. (3rd)
Cockrell, Claude E., Sgt. (3rd)
Colpitts, Keith F., S/Sgt. (2nd)
Conchiglio, Joseph F., Sgt. (2nd)
Coulter, Robert E., Major (3rd)
Cronkhite, John L., Lieut. (2nd)
Cummings, Joseph F., Sgt. (3rd)
Cundick, Beryl R., Sgt. (3rd)
Darelius, Roderick G., Capt. (2nd)
Davenport, John D., Lieut.
David, Herman W., Sgt. (2nd)
Davis, Jimmie N., Sgt. (2nd)
Dawson, Ralph F., Capt.
Decker, Kenneth R., Sgt. (3rd)
Dillon, Stephen P., Lieut. (3rd)
Dimuzio, Carmen C., Sgt. (2nd)
Disalvo, Joseph F., Lieut. (3rd)
Dixon, James V., Sgt.
Dodson, Joe E., Lieut. (2nd)
Dowd, William H., Lieut. (2nd)
Downswell, John R., Lieut. (3rd)
Drake, Clarence H., Lieut.
Duke, Paul L., Sgt.
Dunham, Howard M., Lieut.
Eaton, Henry R., S/Sgt. (2nd)
Ehrenreich, Abraham A., Sgt.
Ehrhardt, Clark A., S/Sgt. (3rd)
Eisenbrown, Walter Thomas, Lieut. (3rd)
Elfrink, Theodore J., Sgt. (2nd)
Epperley, Isaac L., Jr., Lieut. (2nd)
Evans, Roy W., Capt. (2nd)
Ewing, Warren J., Sgt. (3rd)
Ezzard, Richard F., Capt.
Ferebee, Thomas W., Lieut. (3rd)
Fischer, Philip S., Lieut. (2nd)
Fitzgerald, James P., Jr., Sgt.
Flack, Rudolph E., Maj. (3rd)
Flint, Richard Q., Sgt.
Freligh, Gerald C., Sgt.
Fry, George, Sgt. (3rd)
Gallup, John A., Lieut.
Garner, Henry H., Sgt.
Gates, James F., S/Sgt.
Gemmill, Zane A., Sgt. (3rd)
Gibson, Roy H., S/Sgt. (3rd)
Goldstein, Daniel, T/Sgt. (3rd)
Goldstein, Harry, T/Sgt. (3rd)
Goldstein, Otto, Lieut. (2nd)
Gorton, Theodore H., Capt. (2nd)
Gowan, Zackie T., Jr., Sgt. (3rd)
Graham, George R., Cpl.
Granoff, John H., Sgt. (2nd)
Haas, Theodore T., Sgt. (3rd)
Hall, Jarvis E., T/Sgt. (3rd)
Halsey, Gilbert O., Capt.
Hammond, George R., T/Sgt. (2nd)
Hardwick, James W., Lieut. (3rd)
Harris, Willis D., Sgt. (3rd)
Harverson, Wilmer J., Sgt. (3rd)
Hawkins, Robert E., Sgt. (2nd)
Hazleton, Walter L., S/Sgt. (3rd)
Hector, William D., Lieut.
Hendry, Leonard L., Sgt.
Hillard, Lawrence B., Sgt. (3rd)
Hoffman, Carl David, Capt.
Hoffman, Francis P., Sgt. (2nd)
Holland, Edward W., Cpl.
Holstrom, Everett W., Capt.
Hooks, Claude D., Sgt. (2nd)
Hudson, Edward C., Sgt.
Huggins, Harry W., Sgt. (3rd)
Hughes, Aquilla B., Jr., Capt.
Hughes, Warren K., Sgt. (2nd)
Hunter, William, Lieut. (2nd)
Ijams, John H., Jr., Lieut. (3rd)
Jackman, Robert J., S/Sgt. (2nd)
Jacobs, Willis E., Capt.
Johnson, Jerry D., Sgt. (3rd)
Johnston, Joseph P., Lieut. (2nd)
Jones, Garret J., Lieut.
Jordan, George W., Lieut.
Justice, Glen E., S/Sgt.
Kehoe, Nicholas B., Jr., Lieut.
Kellams, Albert W., Lieut. (2nd)
Kemble, Donald W., Sgt. (2nd)
King, Clarence V., T/Sgt. (2nd)
Klimazepski, Thomas M., Sgt. (3rd)
Kundrat, Andrew, Lieut.
Kurtz, Raymond N., Lieut. (3rd)
Lancaster, Jason C., Sgt. (3rd)
Leary, Edward J., Sgt. (3rd)
Leland, Glen V., Jr., Lieut.
Littlewolf, Fred J., Pvt. (2nd)
Locke, Sumner E., Lieut.
Loudermilk, William A., Lieut. (2nd)
Ludolph, George L., Lieut. (2nd)
Lundy, James T., Lieut. (3rd)
Lupica, Peter G., Sgt.
MacTaggart, Irving Paul, Capt. (2nd)
McCauley, Anthony C., S/Sgt. (2nd)
McCorkle, Howell P., Lieut. (3rd)
McDaniel, Abner O., Lieut.
McKeown, Glen E., Lieut. (2nd)
Mahan, Lloyd J., S/Sgt. (3rd)
Mansell, Morris E., Jr., Lieut. (3rd)
Markle, Andrew, S/Sgt. (3rd)
Masters, Karl L., T/Sgt. (2nd)
May, Otis W., Lieut.
Moffitt, Robert M., Sgt. (3rd)
Moore, Horace E., Sgt.
Moore, James W., Lieut.
Mullane, Vincent C., Sgt. (2nd)
Murray, Gilbert A., S/Sgt. (3rd)
Nardine, Howard H., S/Sgt. (3rd)
Nastal, Theodore J., Sgt. (2nd)
Nease, Charles M., Sgt. (2nd)
Neff, Edward R., Lieut. (3rd)
Nelson, Carl C., Sgt. (3rd)
Nissen, John C., Capt.
Nixon, John L., Sgt. (2nd)
Ogle, Kenneth L., Jr., Lieut.
Ojala, Russell L., Sgt. (2nd)
Oliver, Chester H., Sgt. (2nd)
Oliveros, Charles Gard, Lieut. (2nd)
Olson, Carl E., Sgt. (2nd)
O'Neill, Ralph, Sgt.
Ott, Lawrence R., Lieut. (3rd)
Owen, John E., S/Sgt. (2nd)
Padgett, Charles A., Lieut.
Palmer, Philip T., Lieut. (2nd)
Parker, Guy E., Sgt.
Pawlick, Frank J., Sgt.
Pepe, Jan, Lieut. (2nd)
Perri, Steven, S/Sgt. (2nd)
Pitts, John Lee, Jr., Lieut. (3rd)
Pollock, Eugene J., Lieut. (3rd)
Prata, Pasquale, Sgt. (3rd)
Price, Paul E., Sgt. (3rd)
Price, Philip A., Sgt.
Quate, Morris T., Sgt.
Ray, Levon L., Lieut. (3rd)
Rebello, Francisco, Sgt. (2nd)
Remmell, Eugene J., T/Sgt. (3rd)
Rex, John L., Jr., Lieut.
Ribeck, Joseph, Sgt. (3rd)
Richards, Glenn C., Pfc. (2nd)
Roberts, Mark E., Cpl.
Roberts, Thomas B., Sgt. (3rd)
Rogers, James P., Lieut.
Rose, John F., Sgt. (2nd)
Roviaro, Ermando P., S/Sgt. (3rd)
Ryan, William J., Lieut.
Schierholz, Charles C., T/Sgt.
Schmoldt, Harold D., Capt.
Schnorr, Richard F., Sgt. (2nd)
Schu, Matt., S/Sgt.
Schultz, Carl E., Lieut. (13th)
Sedore, Richard S., Sgt. (3rd)
Seed, Andrew M., Sgt.
Senteney, Robert W., S/Sgt. (2nd)
Siboski, William R., S/Sgt. (2nd)
Sierks, Richard J., Capt.
Skipp, Francis E., Jr., Lieut.
Slocum, Paul J., Capt. (2nd)
Smartt, Clare M., Capt. (8th)
Smiley, Charlie O., S/Sgt.
Smith, Douglas H., S/Sgt. (2nd)
Smith, Edward H., Sgt. (3rd)
Smith, Edwin G., S/Sgt.
Smith, Wilfred L., Lieut. (3rd)
Sparks, Frederick H., T/Sgt.
Spears, Vance H., S/Sgt.
Spellman, Elwood E., Sgt. (2nd)
Stolzer, Bill M., Sgt. (3rd)
Stone, Benjamin J., Jr., Lieut. (2nd)
Summers, John C., Lieut. (3rd)
Sutin, Nathan, Lieut. (2nd)
Swedo, Edward W., Sgt. (2nd)
Taylor, Thomas K., Lieut. (3rd)
Teague, Howard K., Capt.
Teufel, Harry M., Sgt.
Thew, Chester F., T/Sgt.
Thom, Albert N., Lieut.
Thomas, Jack P., Sgt. (2nd)
Thompson, Charles S., Jr., Capt.
Thompson, Clyde A., Capt.
Thompson, Howard R., Sgt.
Thompson, John A., Sgt.
Thompson, Woodford R., Jr., Lieut. (2nd)
Tittsworth, John G., Sgt. (3rd)
Townsend, George H., Sgt. (3rd)
Turnbull, John I., Capt.
Tyler, B. Pierce, Sgt. (2nd)
Uhle, Richard B., Capt. (2nd)
Underwood, Aloysius S., Sgt.
Val Preda, Peter, Lieut.
Van Ausdal, James F., Lieut.
Van Kirk, Theodore J., Lieut. (3rd)
Velan, Robert C., Lieut. (3rd)
Vincent, Ralph L., Lieut. (3rd)
Wallence, Thaddeus J., Sgt.
Wallick, Kenneth K., Capt. (3rd)
Ward, Harold E., Lieut. (2nd)
West, Kent R., Sgt. (4th)
White, William T., Lieut. (2nd)
Wikle, Jess O., Jr., Lieut. (3rd)
Wiley, Charles R., Lieut. (3rd)
Wilkin, Russell S., Lieut.
Wilks, Rayburn A., Lieut.
Williams, Paul I., Lieut.
Williams, Paul R., Cpl.
Williams, Richard A., Sgt. (4th)
Willis, Robert H., Lieut.
Wills, Milton E., Jr., Lieut.
Wisnowaty, Edward B., Sgt.
Witt, Hinton C., Sgt. (2nd)
Wojciechowski, Henry, Sgt. (3rd) ☆

Lt. Carle H. Esmay

Lt. Pierce L. Vieth

Capt. Andrew J. Bing

Lt. Paul Pestel


Lt. Jess F. Baker

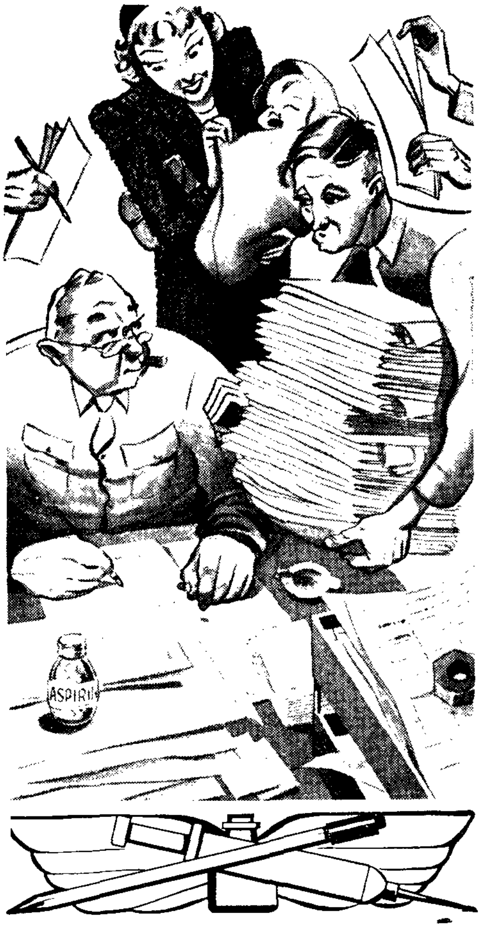
S/Sgt. A. A. Rockafellow

AAF

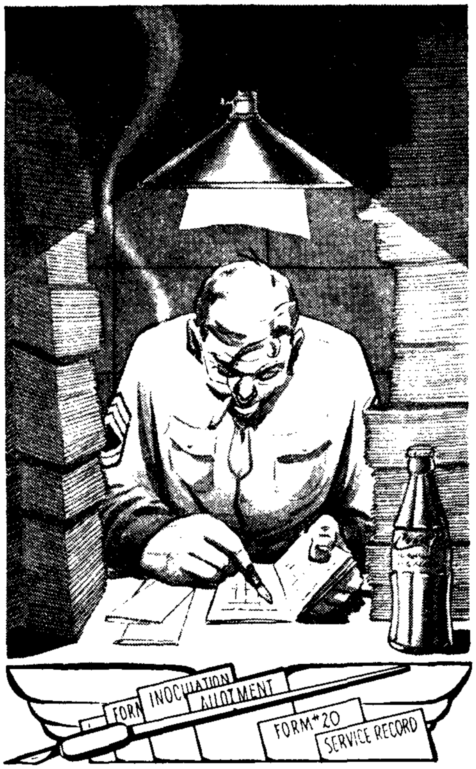
ARMY AIR FORCES

PEN & PENCIL PILOTS

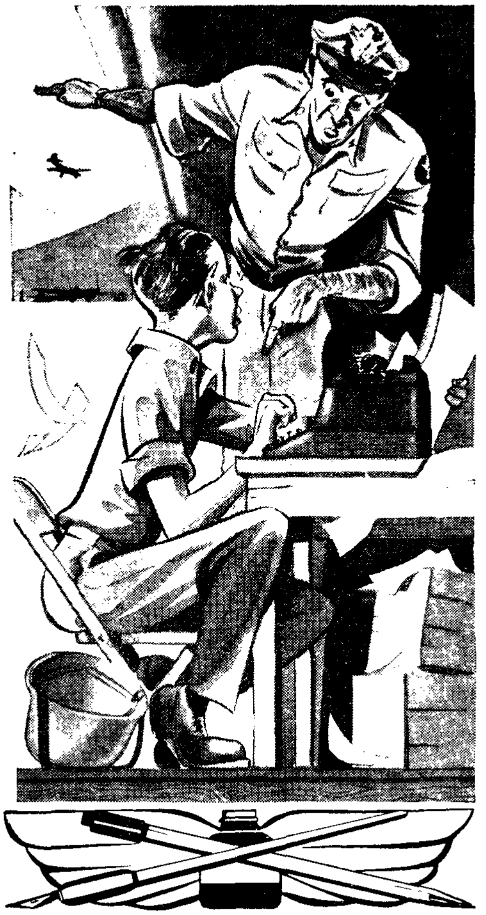
By Lieut. Wm. T. Lent



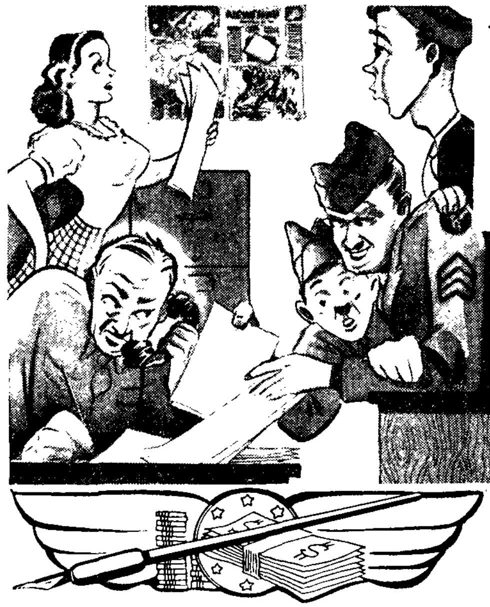
Pencil Pilot Adams works in the registrar's office at base hospital. His missions range from routine flights over Form 52-A (hospital register) to more complicated sorties with Form 72-A (consolidated morning report of wards). At the moment he is being strafed by a sergeant's wife seeking her new baby's birth certificate.



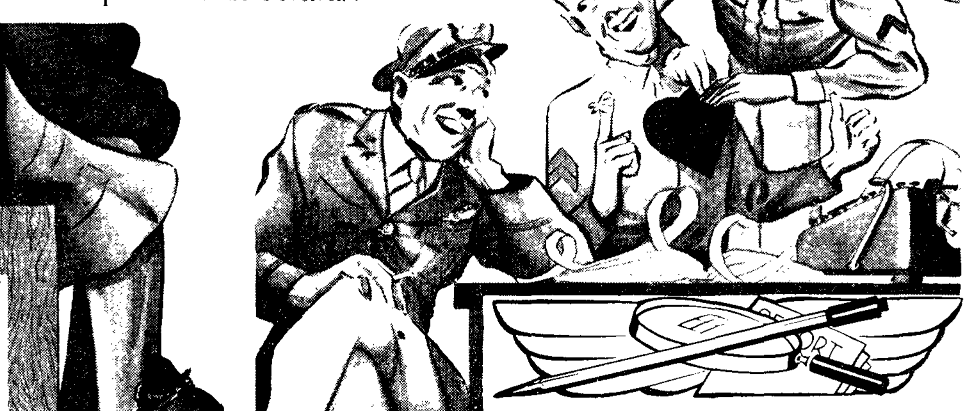
Sergeant Smith of the unit personnel office has hung up more than 100,000 hours with a Dixon No. 2 (medium lead). A late POM order finds this veteran of the Pen and Pencil Corps on a night flight over mountains of service records to help prepare case histories which must be completed before a squadron can move overseas.



At an advance base somewhere in the South Pacific, Squadron Clerk Riley encounters some of pencil aviation's toughest problems. With makeshift equipment, this squadron clerk does a vital job while the boys "upstairs" get all the headlines. Right now the CO is chewing him out for failing to give him credit for twelve hours' flying time last month.



Sergeant Barnes of the finance office flies the pencil "milk run," being charged with bringing enlisted payrolls up to date month in and month out. This job usually involves strong fighter interception in the form of departing GIs seeking travel pay and partial payments, and it's a major victory each month just to get over the target and out again.



Corporal Cohen of the base administrative inspector's office pauses between check-flights over squadron funds and a bull session with a transient bombardier to receive the office's version of the Purple Heart. The corporal qualified for the award by suffering a broken fingernail while piloting the heavy Monroe adding machine.

Mrs. Barney M. Giles, 1st V.P.

Mrs. Carl A. Spaatz, 2nd V.P.

Mrs. J. T. McNarney, 3rd V.P.

THE NATIONAL ASSOCIATION OF

Women's volunteer groups in the AAF unite to formulate a present and post-war welfare program on a national scale.

WOMEN'S volunteer groups will play an increasingly important role in the present and post-war welfare program for the men of the Army Air Forces and their families. This is borne out in the announcement that the hundreds of women volunteers now serving at almost every AAF station are to be united in a national organization known as the National Association of Air Forces Women, with headquarters in Washington, D. C. Mrs. H. H. Arnold is president.

Wives, mothers and daughters of AAF officers can now retain membership in their own national group, regardless of the usual pillar-to-post transfers that punctuate the existence of Army families. Membership in the new organization, the first of its kind in the AAF on a national scale, is extended to women of immediate families of officers on active duty with the Air Forces; to women of immediate families of retired or deceased officers and, according to the policy at each base, to the women officers of the AAF.

Women who can qualify for membership and who are not now members of organized women's clubs of AAF stations may become members-at-large of the NAAFW. Membership information can be obtained by writing to the Secretary, National Association of Air Forces Women, Box 23, Fort Myer, Va. Annual dues are $1.00.

The association was formed to provide a medium through which all volunteer activities of the women in the Air Forces could be coordinated. Included in the National Council of the new organization are AAF women representing the Red Cross, Army Emergency Relief, Spotters, and AAF commands and Air Forces, including those overseas. This group will serve as an advisory board to train its members in a unified system of volunteer work and direct the standardization of major activities undertaken.

Officers elected to serve on the association's executive board are Mrs. Barney M. Giles, Mrs. Carl Spaatz and Mrs. J. T. McNarney, vice-presidents; Mrs. Harold M. McClelland, treasurer; Mrs. B. C. Nowland, secretary; Mrs. B. F. Giles, Mrs. J. M. Bevans and Mrs. Millard Libby, assistant secretaries, and the following directors: Mrs. C. B. B. Bubb, Red Cross; Mrs. Barney M. Giles, AER; Mrs. H. W. Bowman, Spotters, and Mrs. Harold W. Grant, public relations.

ONE of the chief responsibilities of the new group will be to assist in the rehabilitation of Air Forces personnel. In some hospitals volunteers are already working in close cooperation with the AAF's convalescent training program, teaching languages and other specialized subjects to hospitalized men. There will be greater demand for their services in this field as the rehabilitation program expands.

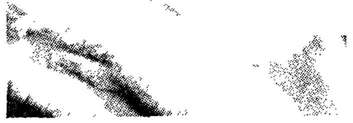
To Air Force women the group also has an obligation. Families arriving at a new station must be located, welcomed to the base and encouraged to serve the AAF and local community in the best possible way. Many branches of the Spotters organization which, as the name implies, are responsible for "spotting all AAF women and helping to find a spot for them," have served as personnel agencies or clearing houses for AAF women in many sections of the country. Their files list personal qualifications, training and experience of the women enrolled, making it possible for groups such as AER, Red Cross and other departments to fill specific jobs with qualified volunteers—whether it's rolling bandages or playing the organ for the post chaplain—at a moment's notice. Or frequently if the soldier's wife is in need of financial assistance, the AER placement division finds her a paid job on or off the post.

Expanding and coordinating this work of the Spotters, AER, Red Cross and the scores of additional local projects now undertaken by AAF women's clubs will be the major function of the NAAFW.

"Although the organization is new," explains Mrs. Arnold, "much of the work being done by our clubs throughout the country dates from long before the war. Many AAF women's clubs have been in operation since the earliest beginnings of army aviation. Therefore it is logical to have the women's clubs act as the hub of the wheel around which all women's activities in the AAF should rotate. The national association will merely draw them together in mutual aims and interests.

"One of the outstanding examples of the contribution that can be made by these groups is that of the Hickam Field Woman's Club. Within minutes of the Jap attack on that field, our women were in the hospitals caring for the wounded, collecting all the blankets they could round up anywhere on the island, evacuating children from danger zones and caring for them until distressed parents could

Mrs. B. C. Nowland, Secretary



Mrs. H. M. McClelland, Treasurer

AIR FORCES WOMEN

Mrs. H. H. Arnold, President

NATIONAL ASSOCIATION OF AIR FORCES WOMEN

Executive Board ☆ Advisory Board

WOMEN'S CLUB OF AAF STATION (Member of National Association)

Major Responsibilities of Women's Groups

A.E.R.

- Rehabilitation.
- Provide hospitalization and medical care.
- Provide layettes.
- Housing problems.
- Chaplain's aides.
- Personal calls on bereaved families.
- Staff assistants to work with Personal Affairs Division in carrying out functions of its Relief, Advice and Claims, and Placement and Education Branches.

SPOTTERS

Send questionnaires to all new members. Keep personal files of past-experience and special qualifications of women enrolled.

Supply upon request trained personnel to other departments.

PUBLIC RELATIONS

Collect and release locally all information on volunteer activities.

Work in coordination with national public relations director.

RED CROSS

- Coordinate with Red Cross field director and local Red Cross chapter in furnishing volunteer workers and organizing Red Cross study courses.
- Day nurseries.
- Mending for hospitals.
- Motor transport.
- Production: bandages, knitting, etc.
- Canteen work.
- Junior Red Cross.

SUGGESTED ACTIVITIES

Sponsoring:

- NCO wives' clubs.
- Aviation Cadet wives' clubs.
- Social activities.
- Study clubs.
- Flower committees for hospitals.
- Garden clubs.
- Lending libraries.
- Junior dances.
- Entertainment for post children.
- Post Christmas trees.
- Sunday schools.
- Boy and Girl Scout troops.
- Athletics for club members.
- "Music for the Services."

take over, driving cars and trucks rushed to emergency aid, preparing hot food and drinks in record time, and generally helping to bring order out of the chaos that was Hickam Field. What they accomplished was almost miraculous, but they were able to do it only because they were foresighted Air Force women who had already been trained along these emergency lines.

"It is not the intention of the National Association of Air Forces Women to restrict in any way the varied projects now under way at our station. Rather, we want merely to be helpful to the different groups and to give suggestions when they are requested. The many women's clubs *must* remain flexible if they are to solve local problems. We do hope, however, to give direction to the activities of these thousands of volunteers in such a way that *our* obligations to our men and the families of our men in the Air Forces are fully met at every station in the AAF." ☆

PREPARE FOR INSPECTION

TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative ☆ Technical
Communication Tactical

Matters presented here are informative only and are not to be considered as directives.

▶ *Prepare for the Worst in Combat:* War is no picnic. It does not mean taking off leisurely from long, well-lighted runways in good weather, flying to a target and dropping bombs, stifling a yawn, and then flying back to an effortless landing at a big base where all maintenance facilities are available.

We honestly don't believe anyone has such a conception of aerial warfare, but we mention it to emphasize the importance of tactical inspections to determine whether organizations going overseas are prepared for the worst. Following are some questions which fighter and fighter-bomber units should be able to answer with a strong affirmative before leaving the States:

Can a squadron "scramble" from dispersed positions in a minimum time, take off, assemble quickly while climbing and still maintain combat formation?

Have pilots practiced rapid take-off, assembly and landing under conditions of minimum lighting?

Have pilots received practice in operating out of small fields?

Have all pilots demonstrated their ability to fly without radio aids to a predetermined point at the limit of the radius of action of the airplane with which equipped, arriving at a predetermined time?

Are pilots adequately trained in operating aircraft under conditions where difficulties might be encountered due to icing?

Do the radio mechanics CNS (SSN-759) understand the problems of operation and maintenance of radio and power equipment under extreme conditions of mud, rain, dust, heat and cold?

Do the maintenance crews understand problems of maintenance under extreme conditions?

Are maintenance crews lost without complete equipment, or are their leaders resourceful?

Can ground crews "bomb up" in dispersed positions quickly and efficiently when given action orders without prior warning?

Has adequate instruction been given in woodsmanship to the end that crews forced down in jungle, desert or arctic territory will be capable of making the best use of all means available to care for themselves and return to the base?

▶ *Beat the Mosquito to the Draw:* When a B-17 tail gunner on a South Pacific island was asked the "recipe" for living to be an old man in the Army Air Forces, he grinned and said, "Think faster than a Jap," then added, "—and think faster than a skeeter."

By "skeeter" the gunner meant the *Anopheles* mosquito, which packs a knockout wallop of malaria. And he wasn't kidding about thinking faster than a mosquito. The malaria-carrying mosquito is out for blood, and each individual soldier should do everything he can to outwit his foe—use sleeping nets, protective clothing and repellents, stay out of malarious villages and get behind screens at night.

Some crew members believed they were safe when they slept inside their bomber one night without nets, but the mosquitoes thought faster than they did and invaded the ship. Ten days later the Japs could cross off some more Yanks as casualties without having fired a shot.

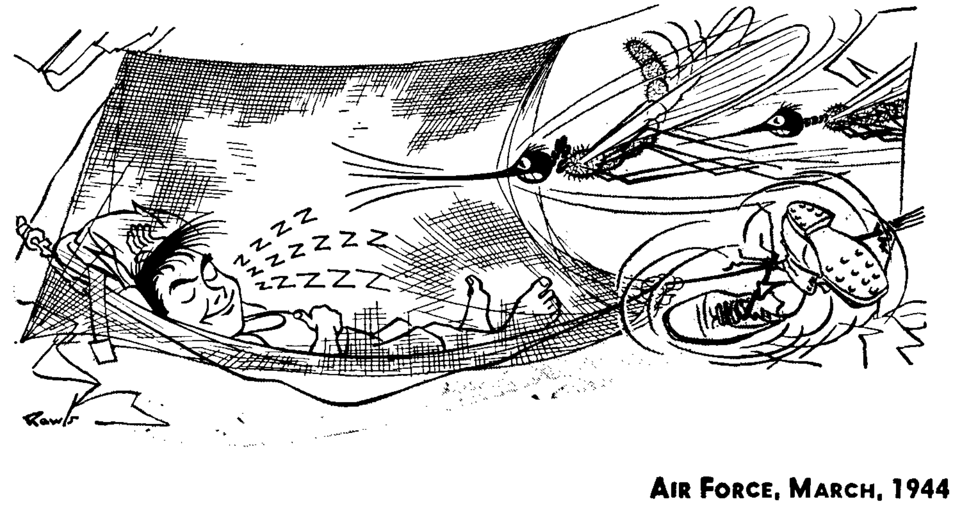
Malaria control is important—just as important as having ammunition in your guns when you meet the enemy. We are not fighting this war in health resorts, but in some of the most malarious regions of the world. North Africa, southern Europe, Burma and the islands of the southwest Pacific are all dangerous endemic areas.

The subject of malaria control is thoroughly discussed in WD Cir. 223,-1943, and Training Circular 108 21 September 1943. We mention it here to help make as many individuals as possible—both officers and enlisted men—conscious of it, and to remind especially the inspectors checking personnel destined for overseas duty to look into malaria control training.

▶ *Hit Kits:* One of the major forms of entertainment in many isolated areas overseas is group singing—the old American barbershop quartet multiplied. But too many stations in the United States apparently have the idea that troops have to go overseas before they can start singing and be provided with Army Hit Kits for stimulating this form of recreation. A recent survey in the continental United States indicates that although a majority of the enlisted men contacted desired to sing, 76 percent had never seen a copy of the Hit Kit.

Distribution of the Army Hit Kit each month should be accomplished immediately upon receipt by the post, camp or station special service officers. The commanding officers of posts, camps and stations, isolated detachments, and units not receiving copies of the Hit Kit should advise the Director, Special Services Division, Washington 25, D. C., indicating the number of packages required. Each Hit Kit package, containing 50 lyric folders and one music book, is designed to service a complete unit of from 150 to 250 men. Units of less than company strength should base their requests on one lyric folder for each four men. (ASF Cir. 126, 19 November 1943.)

▶ *Cross Checking Records:* POM inspectors, checking organizations bound overseas, note as one of the most common deficiencies the failure of organizations to provide for a final cross check where all records are assembled and compared. The records should include those normally maintained by the orderly room,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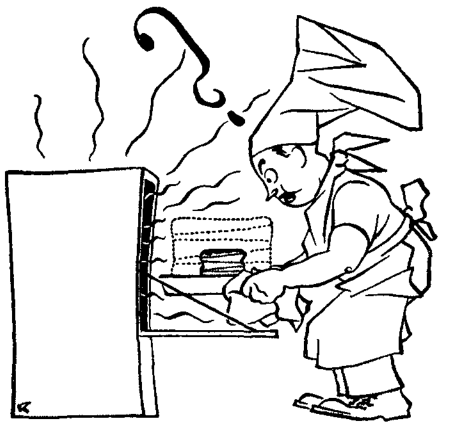
Rawls

operations and medical sections. All personnel records should be checked with the individuals concerned.

▶ *More Tips on Food Conservation:* Conservation of food has been discussed in these columns before, but some interesting points brought out in a conference of 1st Air Force mess officers are good reason for bringing up the subject again.



These officers stressed the following facts:

Failure to prepare food the way men like it is a direct cause of waste.

Failure to consume first the oldest issue of food results in spoilage.

Preparing meats at too high a temperature and too far in advance causes shrinkage as high as thirty percent. Improper preparation of meats also causes men to complain that they are not getting enough. Using a fork to turn meats causes bleeding, with consequent loss of juice, shrinkage and loss of flavor.

Failure to use a fruit juice extractor in squeezing citrus fruits results in the loss of more than fifty percent of the juice. It was pointed out that although extractors were not a quartermaster issue they could be purchased from unit funds.

▶ *Keep the Ball Bearings Rolling:* The Army's policy on conservation is to save on everything, but right now some extra effort is required on ball and roller bearings. There is a serious shortage in practically all types. The shortage is being greatly aggravated by lack of adequate cleaning and lubrication, and improper handling, inspections and adjustments. (Letter AG 412.5 (4 November 43) OB-P-SP-MNT-MB-A, 12 November 43.)

▶ *Technical Order Index:* Numerous reports from the field indicate that maintenance personnel are not always familiar with the existence and use of TO 00-1 (Technical Order Index). This publication, issued every other month, is the foundation of all Technical Order files, and thorough knowledge of its use is necessary for adequate maintenance of AAF equipment. ☆

INSPECTING THE INSPECTOR

How many of you technical inspectors—and other inspectors, too—have read Par. 18, Sec. V. of TO 00-15-1? It contains some excellent philosophy on inspection.

Are you checking to see if there is over-ordering of vital equipment?

Administrative inspectors, are you overlooking inspection of the activities of special service officers?

When investigating a complaint by an individual do you check on the matter only with the individual, or do you question others in similar circumstances to obtain a cross-section or overall picture?

What is the status of the dental treatment of the men in your organization? Many units still have a number of men with serious dental defects on the day that movement orders are received.

HERE ARE THE ANSWERS

Q. ***How many distinctive sleeve patches are authorized for issue to men in job classifications of armament, communications, engineering, photography and weather?***

A. Six. Par. 1, AAF Reg. 35-12, 23 July 1943, authorizes distinctive sleeve patches for wear on the coat, field jacket, shirt (when worn without the coat) and fatigue uniforms. Enlisted men are issued one coat, one field jacket, two fatigue uniforms, and are therefore entitled to six sleeve patches. Also see AAF Ltr. 35-16, 26 November 1943.

☆

Q. ***Is the size of the gas mask still required in the service record?***

A. The entry of the size of the gas mask in the service record (WD AGO Form No. 24) serves no useful purpose and will be discontinued (except for gas mask spectacle type, which entry is required by WD Cir. 282, 1943). (WD Cir. 287, 1943.)

☆

Q. ***It has been noted that little effort is being taken to insure that all open lines and fittings on demountable engine sections are taped or plugged to prevent the entrance of foreign matter. Par. 5, TO 01-1-22 does not completely cover the situation. What TO does?***

A. TO 04-1-14, dated 18 November 1943, Subject: "General—Use of Boss, Cap, and Tubing Seals," contains specific information on the proper sealing of all lines, fittings and tubing.

☆

Q. ***To whom are indorsements made in service records of personnel assigned to Overseas Replacement Depots?***

A. Headquarters, Army Air Forces, has informed AAF overseas replacement depots that indorsements of service records to overseas replacement depots will read that personnel is assigned to the shipment number and not to the commanding general or commanding officer of the port, unless personnel is sent to a port replacement pool, in which event, the indorsement will read that the personnel is assigned to the replacement pool of the particular port of embarkation.

Q. ***Is there a requirement that exchange coupon books be available for sale?***

A. No. Par. 13 c (1), AR 210-65 authorizes the sale of coupon books, but sale of them is not mandatory.

☆

Q. ***What insignia is authorized to be embroidered upon uniform clothing?***

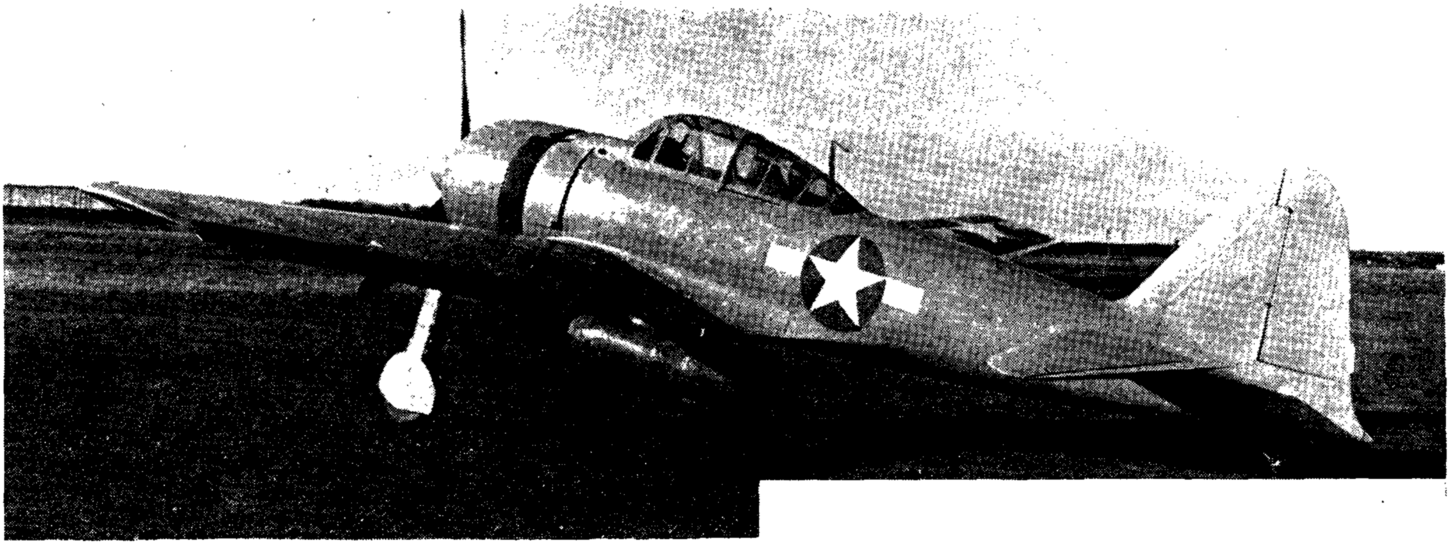
A. The insignia of grade worn on the shoulder loops may be embroidered. (Par. 22g, AR 600-35.)

Q. ***What are the provisions for awarding of the Good Conduct Medal?***

A. The medal may be awarded for exemplary behavior, efficiency and fidelity to each enlisted man of the Army of the United States who on or after 27 August 1940 had or shall have completed three years of active Federal military service, or after 7 December 1941 has or shall have completed one year of continuous active Federal military service while the United States is at war. This award will not be made to an enlisted man whose records, during the required period of service, disclose a conviction by any court martial, nor to one whose character or efficiency is rated below excellent. A recommendation for the award ordinarily will originate with the company commander. (AR 600-68, 4 May 1943.)

TECHNIQUE

A Review of Technical Developments in the Army Air Forces



The "Hamp" at Wright Field.

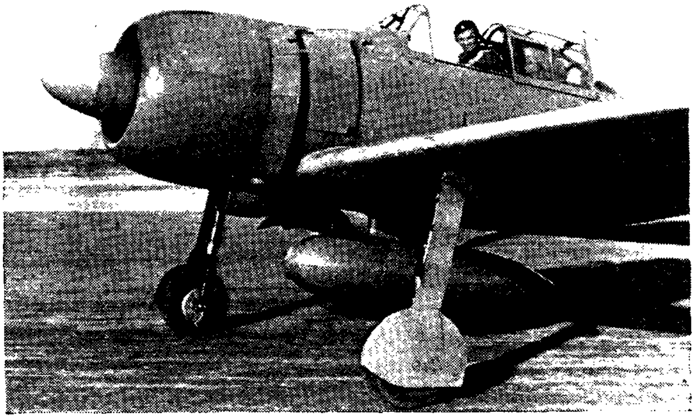
INSPECTING THE

Jap 'Hamp'

On the flying line at Wright Field is a Jap fighter plane, the "Hamp," a late model of the Zero family. It came from Australia where a group of Yank mechanics assembled it from parts of five Zeros shot down in the battle for the Buna airstrip. It crossed the Pacific by boat, and was rebuilt at Oakland, Calif., where Col. J. M. Hayward, chief of the Technical Data Laboratory, Materiel Command, took it over for the Army and flew it to Wright Field for flight tests and evaluation reports.

Army tests pilots will soon take it up to find out how good it actually is. The test plans calls for "air duels" with American fighter planes and bombers, to learn its combat tricks, advantages and weaknesses so American pilots battling other Zeros can know where to hit first and hardest. Once the flight routine is finished and reports are checked the plane probably will be broken up in structure tests to reveal its construction secrets.

Outwardly it has some marked differences from the Zeke, earlier model Zero: Squared-off wing tips (like the P-51) give it a three-foot shorter wing span; the cowling which circles its engine is smaller in diameter; the airscoop which cools the engine is atop the cowling instead of below; the ailerons are shorter; and 100 horsepower has been added to its engine. The "Hamp" has a maximum speed of 350 mph at an altitude of 17,000 feet.



Used widely in the South and Southwest Pacific as a land-based and carrier-based plane, the "Hamp's" all metal structure is light and fragile. The construction is generally the same as our own but the skin covering is much thinner. This is evidenced in flight when the wings wrinkle and scare most pilots who fly the ship for the first time. Yet the wing covering is tough. Apparently the Japs are using a new kind of aluminum-alloy for this purpose.

Colonel Hayward and his staff have discovered that the plane has very low wing loading which means extremely high maneuverability. The brakes are ineffective, and regardless of how much pressure is applied, the ship keeps on rolling. It has a hook for carrier operation.

There are no warning lights in the cockpit to tell the pilot when he should switch over to auxiliary gasoline tanks, but it is easy to get pressure in the tanks which injects fuel through carburetors and into engine for easy pick-up. The pilot permits the main tanks to run dry then snaps on auxiliaries.

"A bit risky, maybe," Colonel Hayward points out, "but a highly maneuverable fighting plane."

The ship carries four tanks, a belly tank, fuselage tank and two wing tanks. It has a range of about 1,200 miles.

The landing gear and flap levers are located in the right and to the rear of the cockpit, differing from ours which are on the left. The throttle is conventional, although the mixture handle works in the direction opposite that in American-built aircraft and pilots find it harder to manipulate. The cockpit is very uncomfortable since it was built for a small person. Everything is in easy reach, but the outstanding feature is a structural difference. The wing and cockpit are all one structure with the fuselage tail section and engine mounts joined onto it. Experts can't say how good the idea may be until they run the break down tests.

Also inside the cockpit is a hook adjacent to the pilot's seat for attachment of a static line which automatically operates the pilot's parachute in bail outs. There is no emergency release for the canopy cover although it can be opened manually without much effort.

The "Hamp's" Nakajimia Sakae radial, 14-cylinder engine looks like our Pratt & Whitney engines, from which it probably was copied. Everything now on the airplane is Japanese-built except the radio set, oxygen installations, air speed indicator and altimeter which were installed to replace inferior equipment, and make flight testing safer and easier.

The "Hamp" has no armor protection but is armed with two 20 mm cannons in each wing and two 7.7 caliber guns firing forward through the propeller. It has no leak-proof fuel tanks.—**Sgt. Douglas Ingells, Air Force Staff Correspondent, Wright Field.**

Armored Helmets for Bomber Crews

Armored helmets for our bomber crews have been introduced in the 8th Air Force as added face protection against flak fragments.

Two new helmets have been designed by the clothing branch, Materiel Command, to supplement the bullet-proof vests introduced several months ago by Brig. Gen. Malcom Crow, air surgeon for the 8th Air Force. Their need was evidenced by the number of facial burns and injuries suffered by our airmen on raids over heavily concentrated anti-aircraft areas of Berlin and other Nazi cities. Also, a decrease in flak wounds since crew members began wearing the armor suits indicated that further face protection would be helpful.

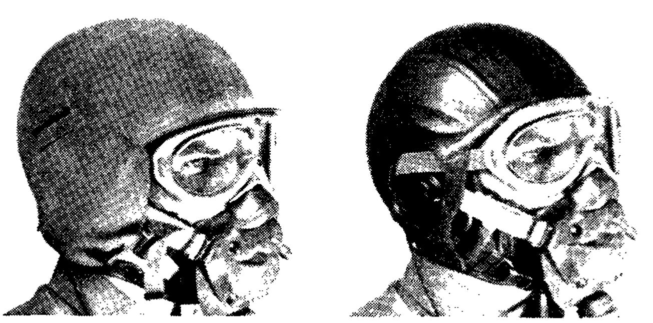
Design of the helmets grew from the standard M-1 model steel helmet used by all our armed forces, a development of the Ordnance Department. The standard helmet in use, however, did not offer sufficient protection to the neck and face of airmen. Consequently, a new design was needed and representatives of the clothing branch, Wright Field, Maj. John W. Schenck, W. W. Moore and Dr. J. L. Clark, worked in conjunction with Col. Renee Studler and Maj. J. R. Byrd, an assistant of the Ordnance Technical Division, to get a new and better helmet which offered maximum protection.

For several months various shapes, sizes and thicknesses were tried, and resultant tests proved that the new AAF helmet could take considerable abuse. Designers also made certain that the helmet, in addition to its protective qualities, would be comfortable and provide freedom for movement.

Officially designated as the T-2 and the T-3 helmets, the protectors will fit over all standard head-dress and equipment worn by both our Army and Navy flyers.

The T-2 covers a pilot's earphones, microphone, oxygen mask, goggles and head covering. It features a "suspended design" which makes it rest firmly and comfortably high on the head so it doesn't interfere with the wearer's other equipment. An adjustable system of straps and buckles makes it easy to get a proper fit.

The T-2 is a "square design" and resembles a football player's helmet with flaps. It covers the crewman's head, forehead, neck and ears and will resist shell fragments caused by explosive flak shells. The T-3 is more rounded and fits like a skull cap. It is used in limited-space positions in a bomber, such as top and ball turrets where it is practically impossible to wear the larger T-2 type.



One version of the new helmet is similar to the GI with earflaps, while the other is for compact quarters.

The T-3 helmet weighs about two pounds, compared with an approximate three-and-one-half-pounds, weight of the T-2 design. Both helmets are exceedingly tough for their weight. **—Materiel Command, Wright Field.**

Radio Trainer Developed in North Africa

What amounts to a Link trainer for instruction in radio procedure and maintenance has been developed at a North African airbase by Capt. Farno L. Green, communications officer of a B-26 squadron. Capt. Green found that most radio operators knew how to handle separate sets but that they needed additional training in the actual use of the sets as interconnected in a bomber. Since aircraft were too scarce to be used in training he made a model cockpit and radio operator's compartment, installed the same radio equipment and arranged it as in a B-26.

Capt. Green's radio trainer, showing the operator's section (left), the radio apparatus and the cockpit in the background.

The trainer was made from scrap equipment, except for the radio sets, and the job was completed in less than a month, including the higher echelon wiring done by Sgts. Harvey S. Huffer, Jesse Stewart, John Seliga and Thomas T. Tucker.

Subsequent use of the trainer has shown that it cuts training time in half and permits explanation of procedure while the pupil is confronted with exactly the same equipment as in an airplane. After each explanation the pupil benefits from actual practice. In fact, the trainer has several features which make it superior to an actual airplane for instruction, Captain Green said. It has an interphone jackbox, permitting an instructor to listen in on the two-way conversations between the pupil and a mock control tower. Demonstrations can be observed by eight men at a time, and wiring is left exposed or accessible for tracing by operators and maintenance personnel.

In using the trainer Captain Green found that trained, but inexperienced men often were confused over the operation of the liaison set's trailing wire. Such a wire not being feasible in a ground model, he installed a dummy antenna so that controls had to be set the same as for a trailing wire in order to make contact with the base ground station.

The trainer gives operators practice in hooking up the command set as a substitute for interphone, in event the latter goes out, and Captain Green has familiarized operators with cockpit procedure to enable them to help the pilot or co-pilot when necessary. He also has used the trainer to give pilots and co-pilots more experience, and hence more confidence, in the use of their equipment. The equipment has also been used to train navigators further in the employment of the radio compass, using small transmitters and frequency meters for bearing shooting and plotting fixes.

Captain Green particularly stresses emergency procedure and believes that, since an airplane normally is not in distress and since radio procedure is easily forgotten, each crew member should be run through the trainer at least once a month to keep him prepared for a possible crisis. He explained that an experienced operator sometimes forgets that his liaison set can be set up for voice in case of emergency, unless he receives refresher sessions in such procedure.

The trainer is portable and can be packed easily in three sections and carried in a two and a half ton truck. — **Lieut. William B. Monroe, Jr., Mediterranean Theatre.**

'Magic' Quilt for the AAF

Among the uses of the flotation quilt is the poncho effect when worn as a garment against weather . . .

A "magic" quilt which rivals the magic carpet of story book fame has been developed at the Materiel Command Equipment Laboratory, Wright Field.

The Army's "magic" quilt is made of water repellent material, weighs 2 4/5 pounds and is stuffed with chicken feathers. In addition to their warmth, the feathers give the quilt enough buoyancy to serve as a life preserver. When the quilt is folded lengthwise and tied around the wearer's waist, it will sustain a man in water indefinitely. It is now part of Parachute Emergency Kit, Type B-4.

Tie-straps along the edges of the quilt enable it to be set up as a pup tent or hammock, and it also makes a cozy sleeping bag. It can be worn as a coat or poncho by utilizing a slit in the center.

. . . and as a sleeping bag to protect the lower body.

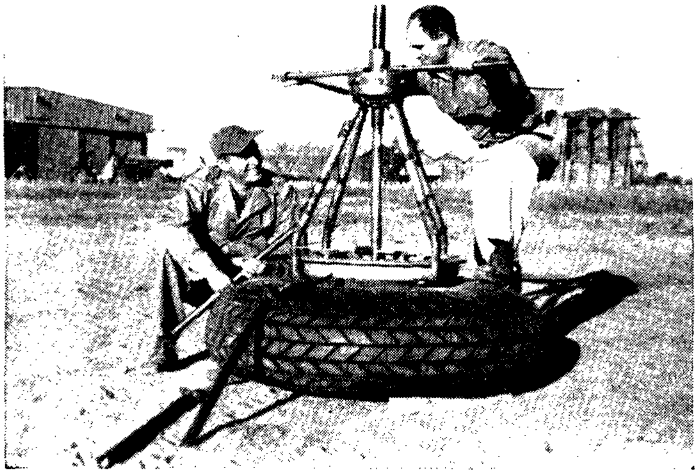
The quilt when packed makes a bundle only fourteen by twelve inches square and when opened, it measures about four by six. It is olive drab on one side and brilliant orange on the other. The OD makes the quilt inconspicuous when concealment is necessary and the orange makes it valuable for signalling purposes.

The quilt is packed in a water-proof, non-toxic carrying case made of light-weight material and a strap permits the user to sling the unit over his shoulders and carry it easily. The case itself can be used for storing water. — **T. A. Berchtold, Wright Field.**

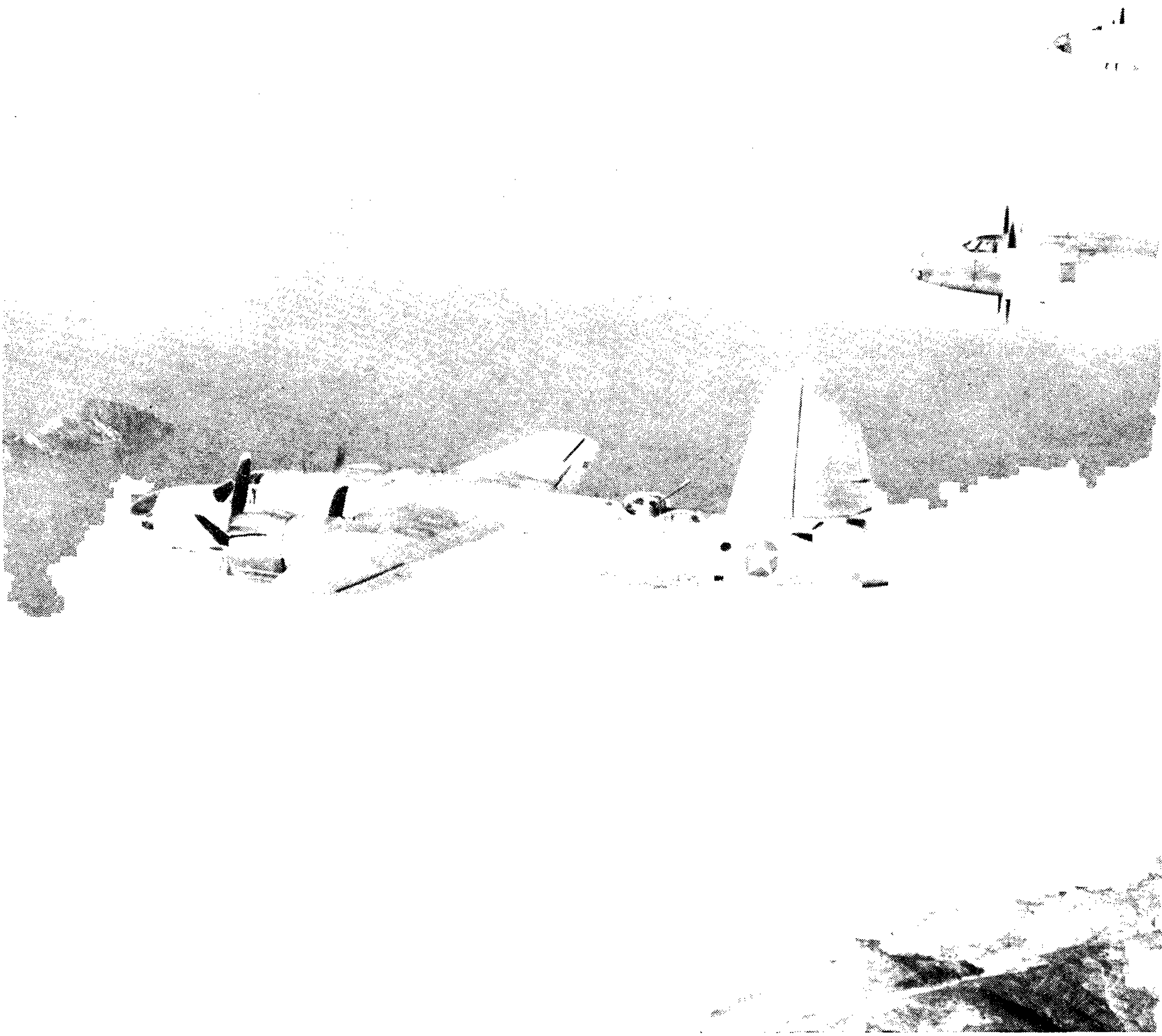
Tire Press in India

Instead of the three hours formerly required for the mounting of a B-24 nose wheel tire, the job can be done in twenty minutes with a homemade device put together by Staff Sgt. Emil Martinelli (right in photo) and Cpl. Virgil Peoples at an air depot in central India. The tire press has saved the AAF hundreds of man hours in the mounting and demounting of all types of airplane tires.

With this device a B-25 tire can be broken from the wheel in less than seven minutes. With flanged pipe lever bars, also designed by these men, the tire can be removed from the wheel in less than six minutes.



The vertical screw assembly is anchored under the tire with a horizontal bar; the four legs hinge on a bolt joint at the top; a cable fastened around the four legs prevents them from spreading out as the screw assembly is turned to force the legs down on the tire bead to break it away from the wheel rim. — **Air Force staff correspondent in India.** ☆

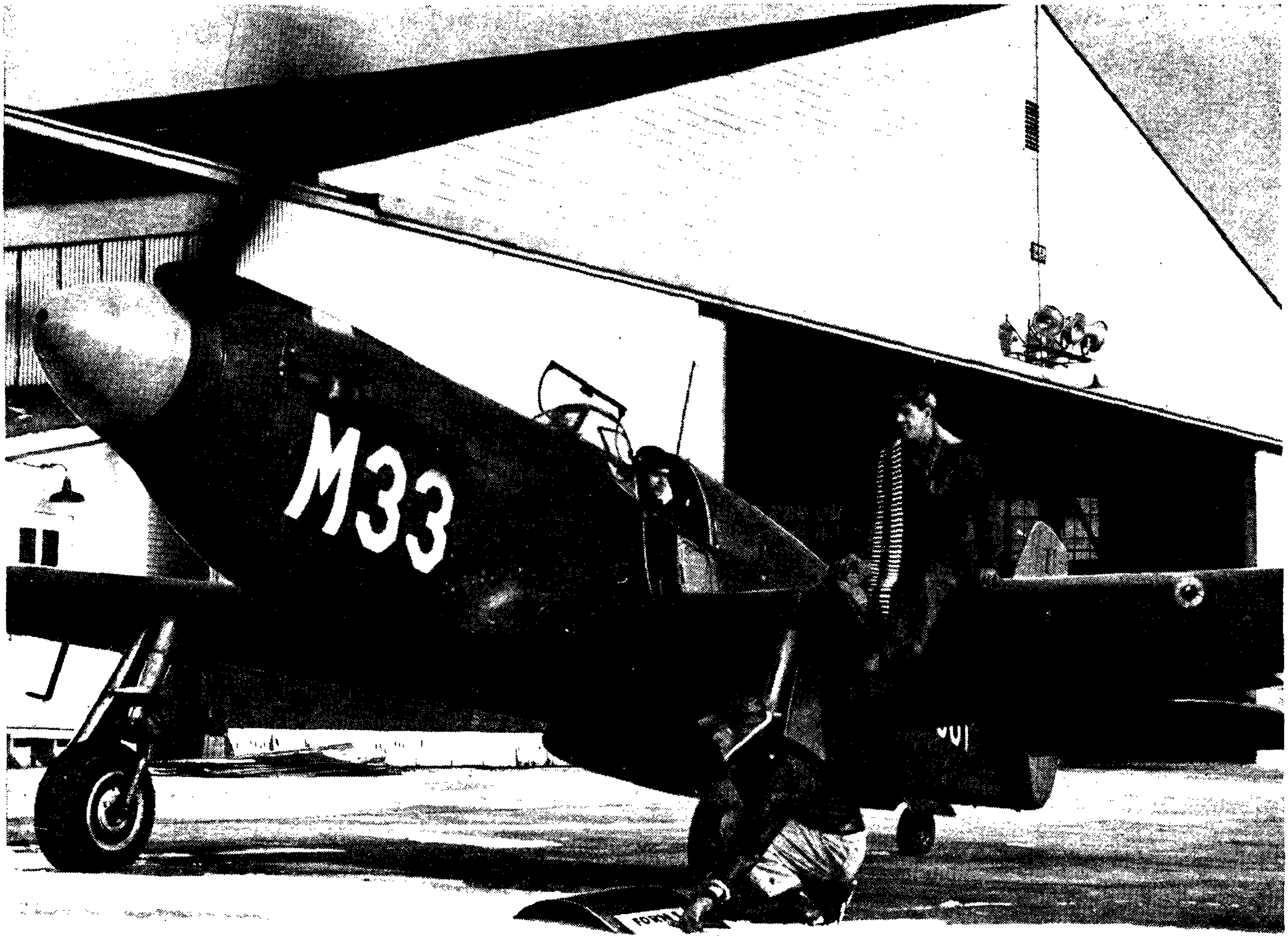


'OIL BURNER' COMES HOME

This remarkable photograph of a crippled B-26, limping along on one engine but still keeping in formation after a hectic raid on German lines in Italy, was snapped by an AAF photographer in the wing plane. When an enemy 88 mm shell knocked out the engine of the Marauder, "Uden Uden's Oil Burner," the pilot feathered the prop and ordered the crew to jettison all equipment possible. The camera caught an ammunition belt (arrow) just as it was tossed from a gun port of the crippled bomber.

But back of this action is another story. It begins at Barksdale Field, La., nearly a year ago when Lieuts. R. R. Bennett and Tilman Beardon, now pilot and co-pilot of "Uden Uden's Oil Burner," talked of what they would name their first bomber. They decided on "Uden Uden," the nickname of their instructor, Lieut. James Aden, who was killed in a training accident just before their graduation. They added "Oil Burner" because that was what Lieutenant Aden had intended calling his ship if he ever reached combat. It was an affectionate term he had for his wife. When Bennett and Beardon left Barksdale they promised Mrs. Aden they would name their bomber after her and her husband.

This was their first combat mission and the lieutenants were determined to bring "Uden Uden's Oil Burner" home. She made it, wheels down, a grand job of piloting from the pupils of a fine instructor.



WHAT'S WRONG WITH THIS PICTURE?

Thanks a lot, Sergeants, for coming out on a cold day to run up this engine in the wrong way. Some snooping around will reveal plenty of pet boners during and after preflight testing. So this picture was posed for March to remind everyone: Better whip up a little precaution during run-up—or the prop blast will whip you up.

The crew chief in the cockpit is Staff Sgt. Harry Horner; kneeling on the ground is Staff Sgt. Albert P. Clouse, and on the wing wearing an unusual sarong is Tech. Sgt. Robert Ross. All three mechs are attached to Headquarters Squadron, Air Service Command Headquarters, Patterson Field, Ohio.

Sergeant Ross can point out seven mistakes in this collection of boners. These are listed on Page 64. We can't offer cigars for any more you may find, so for spotting any additional errors you'll have to take your reward in the feeling of self-satisfaction which comes from knowing proper maintenance practices.

A MONTHLY MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH THE AIR SERVICE COMMAND AND THE TECHNICAL INSPECTION DIVISION, OFFICE OF THE AIR INSPECTOR

FLUTTER . . .

Excessive play in the tab system is an ideal condition for wing and tail flutter—which is not an ideal condition for flight. This excessive play is often the result of loose bolts in aileron, rudder and elevator trim tabs. Keep an eye out for this situation.

TIPS ON STORAGE . . .

Sometimes engines installed in aircraft in temporary and extended storage are not being properly treated for storage. For illustration, examples have been discovered of dehydrator plugs not installed in spark plug holes; all engine openings such as distributor vents, breathers, exhaust outlets and *all* other engine openings not sealed with tape and engine covers not installed. This neglect results in excessive corrosion and rust in engine cylinder walls and piston rings. See Sec. 4, TO 02-1-1.

TIE IT DOWN . . .

When miscellaneous equipment such as tool and mooring kits, engine covers, sandbags and the like is stowed in the tail section of aircraft it must be tied down. If it isn't it is apt to jostle around and foul the controls. See TO 01-1-109.

RIGHT MOTOR . . .

Instances have been reported of the installation of 12-volt motors in a 24-volt system, such as a propeller feathering motor and a fuel booster pump motor. This results in the failure of the electrical system. A closer examination of the data plates and proper tagging of the units will prevent this error.

PROP WASH . . .

The careless starting and running of engines without regard to other aircraft causes needless damage and much extra work. Revving engines around other planes that are undergoing inspection, especially with the rocker box covers removed, is a sure way to blow dirt, grit and other foreign particles into the engines. And tell the boys also to look out for flying ring cowls.

Incidentally crew chiefs should avoid running up engines on loose gravel or sandy surfaces as much as possible because it causes propeller damage.

Be careful of towing or taxiing very light planes behind big ones that are being warmed up. Recently the pilot of an L-4 taxied carelessly past the rear of a B-17 whose engines were turning over slowly. Much to his surprise his ship suddenly went into a violent ground loop which landed him upside down. Crawling out bruised and shaken, he found that the mechs of the B-17 had revved up the engines and the gust caused his "preflight crack-up." Yep, next time he'll be more careful.

SERVICE WITH A SMILE . . .

With summer just around the corner transient aircraft personnel should be alert to clean windshields of insects. Otherwise, the pilot's vision can be severely hampered.

According to AAF Reg. 65-22 transient aircraft crews are required to accomplish daily and preflight inspections. This regulation places the responsibility for the accomplishment of such inspections on the base commander concerned.

INTERCHANGEABILITY CHART IS AN ALADDIN'S LAMP . . .

If fifty airplanes are grounded at an airfield for lack of particular parts, it is highly probably that a large percentage of those planes could be kept aloft by supplying the necessary parts through interchangeability. The old rule was that you had to put back into the plane the identical part of the one lacking, but TO 00-25-29 changes the rule and indicates that mechs are instructed to substitute a *like* part.

Here's how it works, men. Suppose you have a B-17F grounded for want of a power driven fuel pump (class 03-1) and you find none available in the stockpile. Take a look at TO 00-25-29 and you'll find that you are authorized to substitute any one of eighteen, all the same yet made by different manufacturers. And that isn't all. You can see that same pump as listed for 71 different airplanes! All in all that gives you a choice of finding one of 88 pumps to get that airplane off the ground.

The simplified chart lists parts in vertical columns according to the airplane. Lists running horizontally are the parts according to the manufacturer.

More than likely a part is on hand that will fill the bill, yet you don't know it. This remarkable TO will tell you so. For example, if the pump you need for the B17F can be substituted by an A-20C or P-38E pump, well, you just saunter over to that particular stockpile and get what you need.

Further, TO 00-25-29 advises activities when to dispose of obsolete drawings and obsolete parts. Also, the use of interchangeability reduces to a minimum the requisitioning of spare parts.

'Cannibalism, within limits, is standard AAF practice.'

Cannibalism, within limits, is standard AAF practice. If you lack a part to get a B-24 off the ground and can lift it from a badly wrecked P-40 lying out on the field, do so. Your interchangeability chart will reveal at a glance if the dilapidated airplane has the part you need. *Never, never filch a part from a healthy, flyable airplane,* however.

The whole story of interchangeability of parts is not contained entirely in TO 00-25-29. The parts list of an individual TO for a particular airplane is also your interchangeability guide.

Now that the maintenance shortcut of interchangeability has been worked out, make the most of it! When 1,500 airplanes in one week are reported grounded throughout our Air Service Commands for lack of parts, it is probable that a large percentage of these would have flown had a little thought been given to interchangeability of parts. ☆

TRAINING AIDS

Report on Army Air Forces Training Devices

A Terrain Projector for Navigators

A new device for navigation students has been developed to enable them to learn pilotage (map reading) and the principles of dead reckoning navigation without subjecting them to the hazards of getting lost in unknown terrain.

The gadget known as the terrain projector, consists of a vertical projection screen provided with a silhouette of a miniature airplane, nose pointed upward, in the center. A positive plate in black and white of a portion of the earth's surface as seen from an airplane is projected on the screen to cause this image to move from the top toward the bottom of the screen. The students who sit in chairs in front of the screen thus have a view of the movements of the terrain with respect to the airplane in which they are assumed to be flying.

An instrument panel may be projected upon the screen in conjunction with use of the trainer informing the students of the air speed and heading at which the plane is flying. The students have with them maps of the terrain whose image is being projected upon the screen and one of their primary duties is to view the location of the plane with respect to the terrain below, as seen upon the screen, and then by a reference to their maps determine the exact assumed geographical location of the plane. Thus valuable training in map reading is secured. Furthermore, since they know the point of departure and heading and air speed at which the plane has been flying, by employing well-known principles of dead reckoning navigation they may then be required to ascertain the assumed wind speed and direction. With position and wind conditions known, the instructor may then require the students to indicate what their heading should be to fly to the next destination.

The terrain trainer also includes a large circular rail, known as the azimuth, which lies flat on the floor. It is graduated in degrees from 0 to 360. Rotatably mounted upon the framework is a projection carriage on which is mounted a second smaller carriage known as the plate carriage. The plate carriage holds the projection plate which is a diapositive reproduction in black and white of a section of the earth's surface as seen from above.

Requirements requests for the terrain projector have been made of all training commands and their needs are being ascertained by the Training Aids Division.

Hand Blinkers for Signal Training

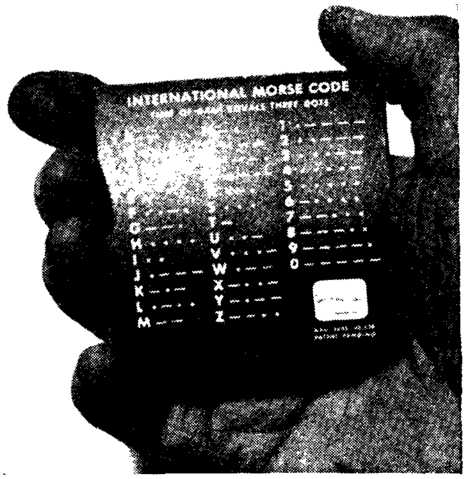
As the war continues it becomes increasingly obvious that air warfare in many respects is following the pattern of naval warfare. Formations and tactics closely follow the same pattern in each case. The relationship between a formation of heavy bombers escorted by fighter aircraft, and heavy battleships flanked by protective destroyers, is too apparent to escape the eye.

Strangely, or logically enough, the pattern continues down the scale and manifests itself in surprising ways.

Communications, as an example, poses the same problems in either case. Whether battleships or bombers are involved, radios may be destroyed by enemy action or it may be inadvisable to use radio as a means of communication inasmuch as position may be revealed to the enemy. The Navy long ago solved the problem of "intimate communication" by means of signal flags and blinkers. Obviously, speedy aircraft cannot communicate with other aircraft or ground sources by means of flag signals. They can, however, receive and transmit messages by using the blinker.

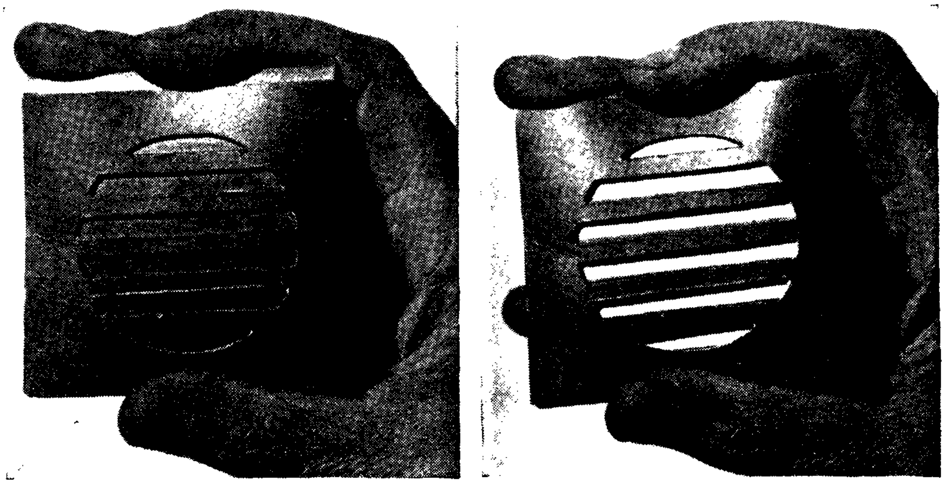
The Navy blinker, a familiar sight to all of us, is that big round device with shutters that blink off and on, sending out the dots and dashes of the Morse Code by means of powerful light flashes. When the AAF turned to the blinker as a means of emergency signalling, actual blinkers for training were scarce, and it wasn't until a simple cardboard gadget was developed that we were able to set up a real training campaign in the use of the blinker.

The cardboard blinker devices are being turned out by the thousands at a very nominal cost. Their operation is simple, involving merely the press of a finger, and the International Morse Code printed on the back of the device enables each trainee to "blink" out his messages long before he has committed the entire code to memory.—**Capt. Albert Hailparn, AFTAD**



Reverse side of the device (above)

Slight pressure of the fingers creates blinker effect.



WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.

▶ *The Gunner's Information File*

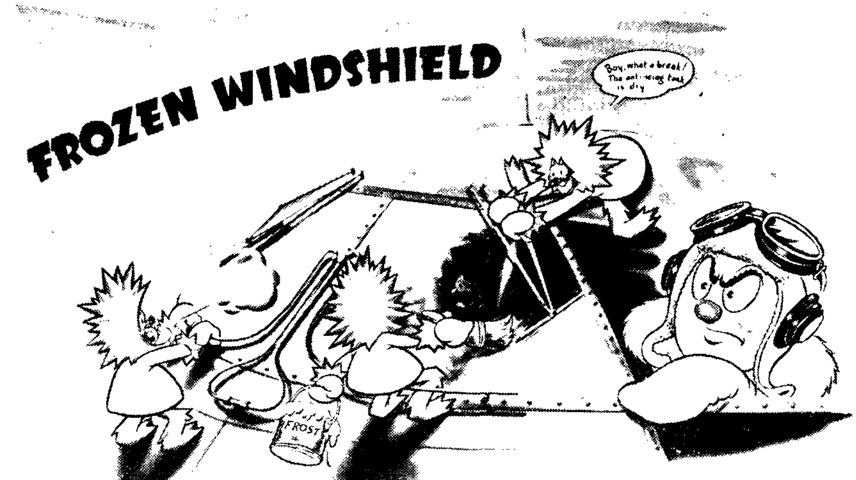
A manual covering all phases of flexible gunnery, to be known as a Gunner's Information File, is now being prepared at AAF Training Aids Division. Although much of the material to be included has been published in widely scattered publications, many of which may not be available, the file will bring together all the pertinent information that applies to either the student or combat flexible gunner.

The file will treat in detail the operational maintenance of the turrets in common use, sights and the "position firing" system of aiming now being taught throughout the AAF. Other sections will cover basic information about aircraft, the duties of the gunner and of the other members of the crew, recognition of aircraft, vessels and terrain features, and emergency measures including the proper use of parachutes, ditching procedures, survival in the arctic, desert or at sea, first aid, fire fighting and signalling. Proper methods in the use of oxygen and interphone communications will also be stressed. Combat tactics will be covered to aid the gunner in recognizing what is going on in the air about him.

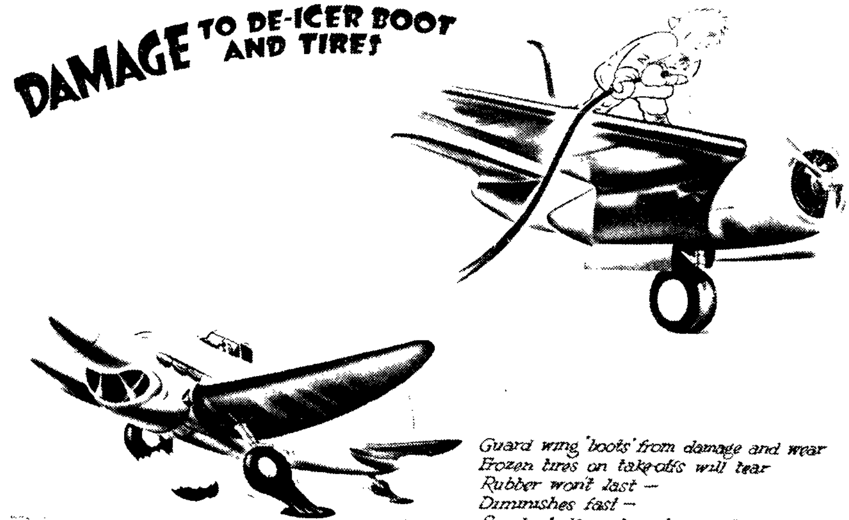
The manual will be looseleaf to permit amendments from time to time as tactics change and conditions warrant. It will be fully illustrated, simple, straight-forward in presentation and will be published in compact letter size.

The sections on weapons, turrets, sights and sighting are expected to be distributed within a few weeks. These sections will be followed at short intervals by other sections on operational matters.

The Manual is being prepared under the supervision of Headquarters, AAF flexible gunnery training section, AAF Training Aids Division and the Central Instructors School (Flexible Gunnery) of the Training Command, at Buckingham Army Air Field, Fort Myers, Fla.☆


FROZEN WINDSHIELD
Boy, what a break! The anti-icing tank is dry
FROST

A windshield all covered with frost
Can add up to considerable cost.
For a grounded plane
Is a pilot's bane —
And may mean that a mission is lost.

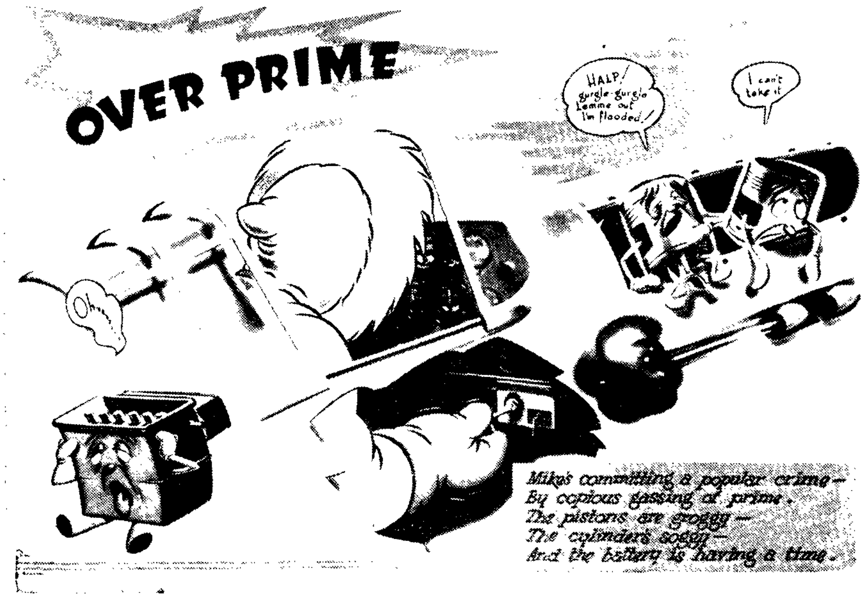

DAMAGE TO DE-ICER BOOT AND TIRES

Guard wing 'boots' from damage and wear
Frozen tires on take-offs will tear
Rubber won't last —
Diminishes fast —
So check these two items with care.

▶ An Arctic Poster Series

A new air poster series, featuring "Frigid Freddie," a cold weather gremlin, is now being produced by the Training Aids Division to illustrate the servicing of equipment in sub-zero temperatures. The posters are designed to point out the hazards of cold weather to both ground and air crew members.

"Frigid Freddie" shares the poster illustrations with "Mukluk Mike," the dopey mechanic who can always be trusted to do the wrong thing, and "Slipstream Sam," the pilot wonder who, too, is not without a fault. The posters, 22 by 32 inches, are to be assembled in the standard AFTAD binder for training convenience.


OVER PRIME
HALP! gurgle-gurgle Lemme out I'm flooded!
I can't take it

Mike's committing a popular crime —
By copious gassing of prime.
The pistons are groggy —
The cylinders soggy —
And the battery is having a time.

CENTRAL PACIFIC OFFENSIVE

The 7th Air Force

(Continued from page 13)

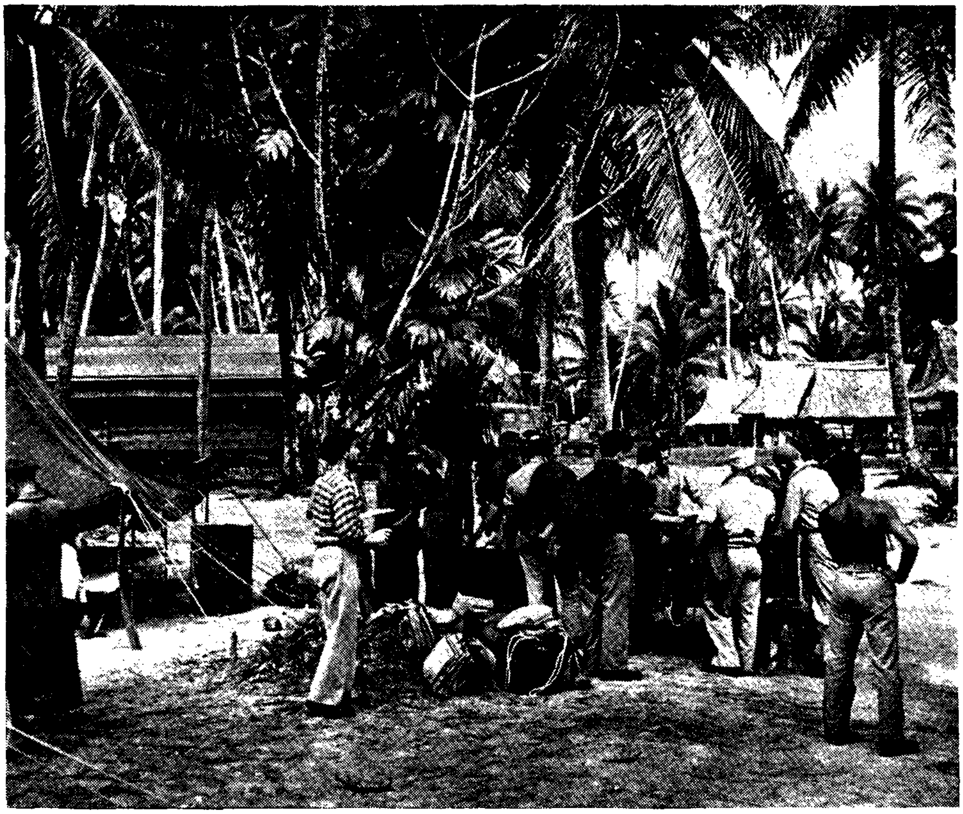
must be hit squarely. A single pin-point in the European theatre might be a factory; here it would cover an entire island. For us each installation on an island is an objective and must be carefully knocked out. Therefore, each plane makes its own run with each bombardier doing his own bombing. The target must be directly hit. The difference of forty feet one way or the other can mean that the bombs land either in the lagoon on one side of an island or the ocean on the other. And we don't fly 2,000 miles to kill fish.

We do not fly in tight formation because of the weather. Constantly, bad weather lies between us and our targets like a huge wall especially constructed by the enemy. Just as bad is the fact that the weather comes out of the enemy's direction—and the Jap takes due advantage of it. In order for our planes to get through these turbulent fronts they have to break up into small elements and fly through it as best they can.

With a problem of great distances and few bases, supply and personnel are major operations factors. The problems of supply are being brilliantly met by Air Service Command. They have made many innovations designed to meet the peculiarities of this theatre. One of these is the ASSRON which is our abbreviation for Air Service Support Squadron. Roughly it is an adaptation of the service center streamlined and designed to meet the needs of the small island bases from which we operate.

Fighter units during the present phase of operations are serving the important function of air defense on the islands we seize. That they are ready to perform and will perform is witnessed by the fact that at various times they have flown hundreds of miles over water to new bases. But the bombers are carrying the ball. Each member of a bomber crew must know his job perfectly. If a plane is damaged or fails on a mission there is little opportunity to put it down on land or to bail out. Ditching is almost invariably the sole answer, and the ocean is mighty large when you're sitting on it in a rubber raft. We do our best to keep out of those rafts.

Each step we make across the Pacific shortens the distance to our ultimate target, the mainland of Japan. Our medium bombers are ready to swing into action. As we draw nearer we will bring more and more weight to bear on the enemy, and all our aircraft—heavy bombers, mediums and fighters—will be in operation as we sweep across the Central Pacific to bomb the economic strongholds of the enemy and land our forces in Japan. ☆



These 7th Air Force heavy bomber crewmen have just arrived at an advance operations base in the Central Pacific. They are bringing the most modern training to this primitive outpost. That rodeo shirt, at first glance, makes it look something like Pendleton Roundup—with palms.

Two natives on an advance base in the Central Pacific watch with modified interest as Aerial Gunners Staff Sgt. Dan Marquette of Toledo, Ohio, and Staff Sgt. Winfred Armstrong of Erlanger, Ky., clean their dismantled machine guns following a bombing mission over enemy territory.

LIFE ON A CORAL ATOLL

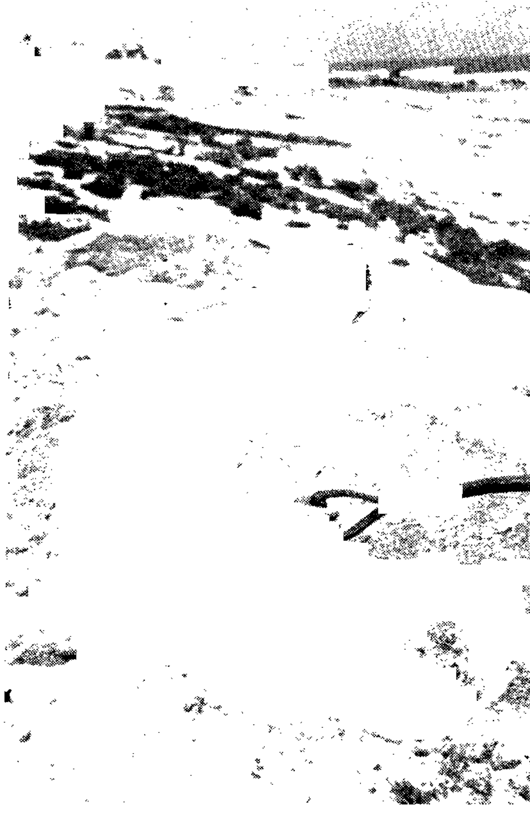
Self-sufficiency is the keynote of existence on the pin-point coral atolls of the Central Pacific, now being used as operational bases by 7th Army Air Force units. Far from being the dream spots which are often pictured in musical comedies and movies, these tiny outposts offer little more in the way of natural resources than barren soil and a stand of palm trees.

Nevertheless, Yankee resourcefulness has made some of the atolls quite livable. The inevitable and indispensable fox-hole is often lined and outfitted so that it becomes relatively comfortable. Scrap materials are ingeniously converted into hospitals, field kitchens, post exchanges and living quarters. Before the war these specks on the ocean, passed over without conscious notice by the casual map reader, were sparsely inhabited by natives who even then found life none too idyllic. Where Americans have taken over they have sought to segregate or evacuate the natives to protect them from war's harm. The tricky Japanese, however, have taken no such precaution, often building fortifications within hut villages. On some of the coral posts which have not been subjected to enemy attack, GI landscape artists have done freelancing among the native trees and shrubs, and while there is no report available on their productivity, there are now Victory Gardens in the Central Pacific.

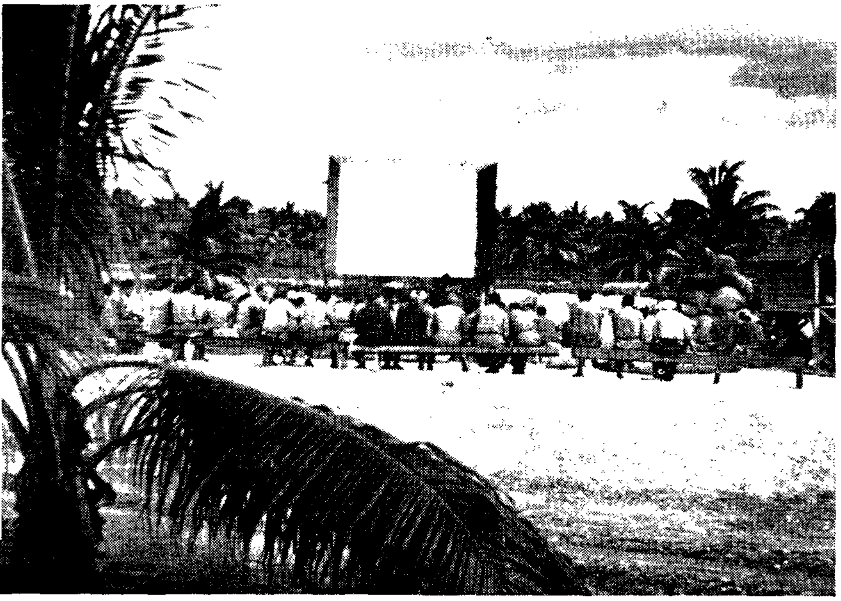
WILBUR L. CASADY
MEMORIAL CHAPEL

Chaplain Lawrence J. Mitchell of Seattle, Wash., greets the fellow-members of his congregation following church services at an island airbase. The chapel has been dedicated to Wilbur L. Casady, a fighter pilot who was killed in a plane crash while his squadron was based on the island.

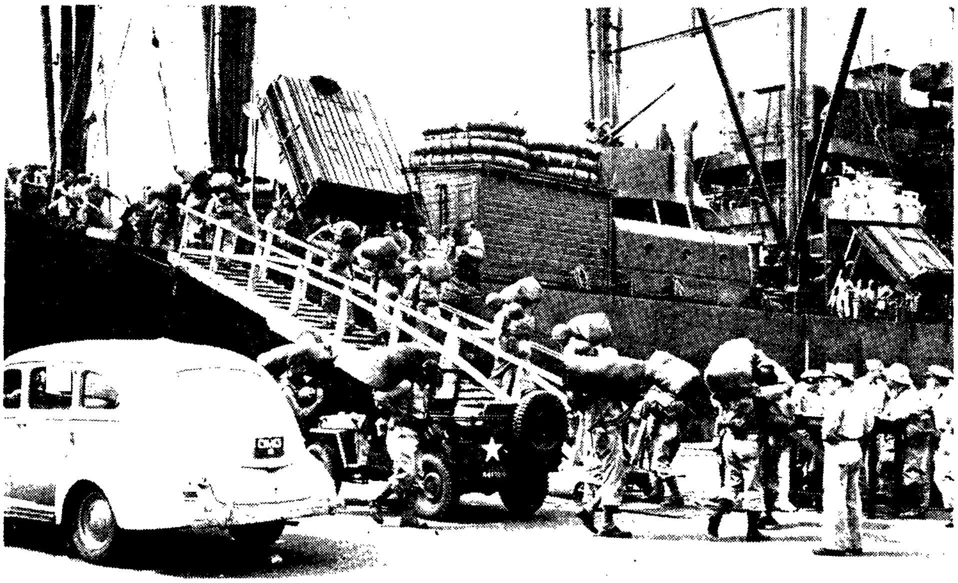
At first, living conditions can be described briefly as outdoorsy and a bit rugged. Cpl. Harold (Pete) Prior of Council Bluffs, Iowa, (right) prepares to remove his beard.



One of the first things each man does when he arrives on an atoll is dig himself a foxhole.



This isn't Radio City Music Hall, but the enlisted men and officers gather early at the squadron's open air theater. Quite a place to see caterwauling jungle pictures, or some Hollywood ideas on romantic island life, isn't it?



An Air Service Support Squadron is on the move in the Central Pacific.

ASSRON IN ACTION

The Air Service Support Squadron, abbreviated to ASSRON, is composed of specially trained amphibious troops who follow closely the assault forces on a beachhead and, when the necessity for supporting these forces is over, begin their primary duty of preparing facilities necessary for tactical air force units to operate from the new positions.

The ASSRON of the 7th Air Force is designed for Central Pacific island warfare. It includes about half as many officers and men as a service center. The reduction is accomplished by eliminating such detachments as the quartermaster truck company which would serve no purpose on the small atolls of the Pacific. On the other hand, such units as engineers and signal sections are enlarged to speed the constructions of runways or other installations.

In addition to installing communications, repairing or constructing runways, and preparing normal utilities, ASSRON does a little bit of everything from first to fourth echelon maintenance. For example, ASSRON may patch up a heavy bomber so it can be flown safely to a major base for complete repairs.

The great value of ASSRON is its fluidity. Supplies and stores are kept on barges to eliminate losses in movement and save on labor. When a new base is completed and ASSRON is ready to move on, the floating supplies are ready to go, too.

The ASSRONs are continually refreshed. When a tactical outfit advances to a new base, the ASSRON at the old base returns to Hawaii for rehabilitation and reorganization. It is then ready to leap-frog over the other ASSRONs and move into the next base that is taken.

ASSRONs are operated under Brig. Gen. Walter Reed, commanding general of the ASC in this theatre. The idea of an air service support squadron was conceived in November, 1942, by Col. K. E. Tibbetts after he made a study of the needs and requirements of the 13th Air Force in the South Pacific.

Colonel Tibbetts and A-4 personnel later worked out a plan for an air service support unit adapted to the Central Pacific theatre. Its primary purpose was to avoid having tactical units bogged down with the necessity of clearing their own airfields and performing other jobs which would prevent full attention to combat air operations. That ASSRON has been successful is witnessed by the rapidity with which the tactical organizations of the 7th Air Force have moved on to the newly won islands in the Central Pacific without loss of operational time and strength. ☆

TACTICAL WEATHER IN THE CENTRAL PACIFIC

By Lieut. Col. Richard Arnold

Staff Weather Officer, 7th Air Force

A permanent weather front in the vicinity of our bases must be confronted by the majority of the land-based aircraft operating in the Central Pacific. It is known as the inter-tropical front and is generally found in the doldrum belt. From November to March it moves southward. Then it turns and moves north.

The width of the belt varies due to synoptic variations. Now and then it is narrow and well-defined; at other times, it is wide and diffused. Various parts of the belt have greater movement than other parts. Due to the lack of historical data in terms of present day analysis, it is difficult to type systems in this area or to find correlations in apparent periodicity such as are found in the Aleutians. However, it is believed that the weather here is released by systems farther north and south of this zone.

The description of the belt varies. In its less intense form there is scattered cloudiness, and it is showery. Or it is narrow and it intensifies to a solid wall of thunderstorms with extreme turbulence, heavy rainfall, decreased visibility and strong winds. The continuity of movement and intensification is not well defined. The belt is erratic and hard to tie down. From one 24-hour period to the next it may vary within extreme limits. From weak intensification it may build up to extreme turbulence and then drop back to its former status.

In this area one of the great difficulties is that there is no distinction between air mass. The air is practically all homogeneous. In other theatres the weather, due to air masses, is sufficiently well marked to track and forecast storm areas accurately. In the Central Pacific there is a zone of convergence always potentially ready to intensify.

The tropical front can be recognized by the marked increase of showers, convective activity and increased cloud forms. The approach and penetration of this frontal zone remains the same as for all well developed fronts—normal to the axis of the front using the usual precautions.

While it is frequently possible to penetrate the inter-tropical front at medium altitude when intense, it is generally impossible to top the weather. However, it may be penetrated at minimum altitude. The form of the tropical front restricts the type of planes that can fly through it as well as the number that can fly through it in formation.

Since the inter-tropical front represents a continuous barrier in this area to land-based aircraft and their objectives, a constant check must be made on all latest weather information. Search planes give the most up-to-the-minute coverage.

Due to the sudden intensification of these centers every source of information must be utilized and immediately relayed to all weather units. The accuracy of weather forecasting resolves itself to a matter of accurate and speedy communications. In this, the Army Airways Communications System is doing a remarkable job in this theatre. ☆

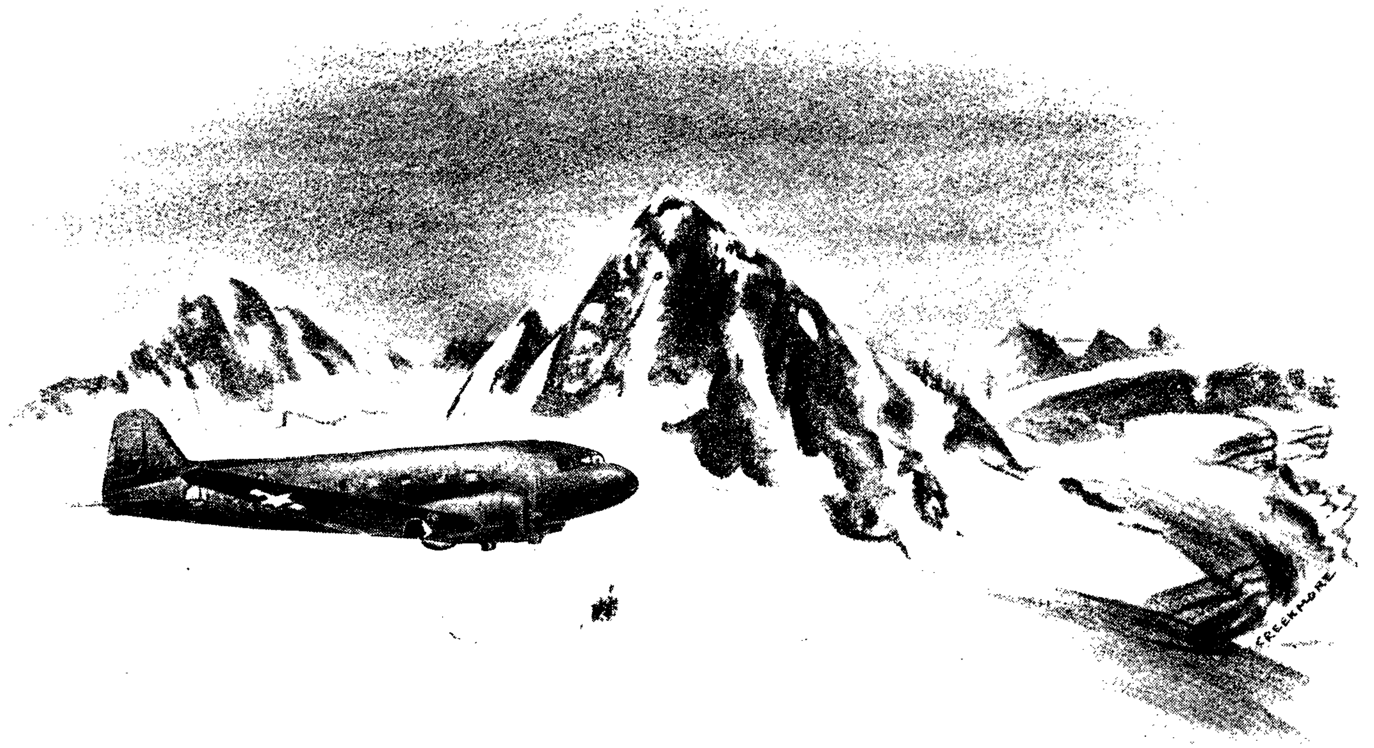


Illustration by Capt. Raymond Creekmore.

CONQUERORS OF THE HUMP

Capt. Robert V. Guelich
AIR FORCE Staff Correspondent

WHEN the Air Transport Command's India-China Wing won the Presidential citation for its achievements, the shroud of secrecy that for two years enveloped details of the successful struggle to fly supplies to American and Chinese forces in China was lifted.

The facts revealed in January were these: At the close of 1943 the Wing was flying more tons per month of military supplies to China than ever were delivered over the Burma Road. More tons of cargo were being transported than all of the American airlines hauled prior to December, 1941, and the India-China Wing was operating more airplanes than America's three largest civilian airlines.

During the year of intensified operations, airdrome facilities were more than doubled in Assam, the number of cargo-carrying planes was tripled, maintenance and repair efficiency was increased fifty percent, inauguration of night flying doubled the number of possible cargo flights. As a result of these measures, the amount of cargo carried on the military supply lifeline over the "Hump" to China was increased tenfold in twelve months, dwarfing the achievements of any commercial airline in history.

Behind these facts are the stories of flights over the world's highest mountain ranges, in part over Japanese-held territory, of battling 100-mile-an-hour-winds, of flights as high as 30,000 feet, of flying through monsoon weather, of carrying on ground maintenance and supply at bases deluged by the heaviest rainfall in the world, and of meeting Japanese fighter interception in unarmed planes. It is no wonder that crews count their time officially as combat flying in their continuous battle to reinforce the fighting forces in China.

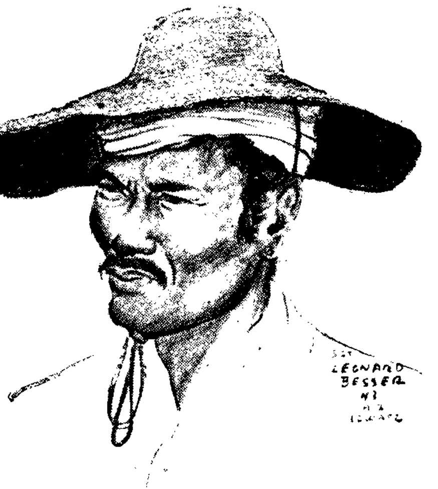
The increasing tempo of 14th Air Force operations tells the success story of ATC's India-China Wing.

Originally with C-47s, now with C-46s, C-87s and B-24s retired from combat, the ATC is transporting jeeps, six-by-six trucks, ambulances, sedans, P-40 wing panels, primary trainers, aircraft engines, gasoline, bombs, ammunition, Chinese and American troops, PX supplies, mail, tents, clothing and rations not available in China.

The importance of these supplies to our 14th Air Force and to the Chinese air and ground forces is immeasurable. The best yardstick of the military importance of this high-pressure pipe line is the increasing tempo of operations against the Japanese by Maj. Gen. Claire Chennault's fighters and bombers.

Despite the potential dangers, the typical Hump run is an uneventful flight of only a few hours. Day and night, before engines have had a chance to cool, cargo is loaded into planes at different airdromes; each plane with its crew of pilot, co-pilot, engineer and radio operator taxis out with its heavy load of war cargo and takes off from its base in the valley of the Brahmaputra. Once airborne, the plane must spiral up to altitudes varying from two to five miles before setting its course toward China. Mountain peaks rise to 16,500 feet along the run and to greater heights away from the usual course. Weather almost as high as Mt. Everest frequently must be topped to avoid fierce wind storms and severe icing conditions on the route over the Himalaya ranges in northern Burma.

Once on course, the heavily loaded plane cruises over the rugged and rocky white-capped mountains, sometimes within range of Jap fighter planes, until it is



A Northern Burma tribesman.

precisely the right time to let down on a Chinese airdrome more than 6,000 feet above sea level and squeezed between mountains 8,000 to 10,000 feet high. Losing altitude fast after getting over these ranges, the pilot touches his wheels on the runway of crushed rock bound with mud, and chalks off another successful mission on the plane's Form 1. It's as easy as that if you don't have engine trouble, if you don't get caught in windstorms, if you don't encounter icing, if you don't get blown off course while flying instrument, and if you don't meet any Jap planes. Skillful piloting, sturdy ships and fighter patrols are your protection.

Crews have lost their planes and have been forced to parachute into jungle country or into the midst of the rugged mountains. Many have struggled for weeks, despite injuries and burns and disease, to make their way to safety. The terrain is so rugged that survivors spend entire days traveling one or two miles.

During late 1943, the India-China Wing accomplished miracles in guiding its forced-down crews back to safety, and the record is improving steadily. In the early days of the Hump run, practically nothing was known about most of the territory over which the cargo planes were flying. However, in the spring of 1943, as the Wing was being expanded, ATC intelligence officers concentrated on the accumulation of scattered details about the terrain, the paths, the native tribes, the food, Jap patrol positions and other information that could aid crews lost in the mountainous jungles.

During the summer, several airmen who had been forced down succeeded in communicating with American aircraft flying overhead and with Allied ground patrols. Their rescue resulted in the compilation of much valuable information concerning the hitherto uncharted country. Maps soon were revised and given to each crew; information about inhabitants, friendly and unfriendly, about American and British and Chinese outposts, and about river and overland routes was made available to all flying personnel of the Wing. This actually marked the beginning of the "discovery" and mapping of the hitherto uncharted country. A briefing system for crews and an intelligence query of rescued personnel made possible the compilation of facts about the country that later proved vital in the rescue of other crews.

The rescue and search work of all branches of the Wing were consolidated in October as the Air Search and Rescue Unit. With several planes at their disposal, air crews of the unit take off as soon as word is received that a plane is missing; the search missions they fly are long ones, scanning from high altitudes and scouring at tree-top level between mountain ranges. When a missing plane or crew is located, signal panels and medical supplies, if needed, are dropped with food and instructions. In emergencies, medical personnel have parachuted into the mountains to assist wounded crew members during the long walk back. As many as thirty survivors at a time have been supplied from the air during their treks back to civilization.

During the entire year of 1943, the record of returns to safety is primarily a tribute to the work of Capt. John L. Porter (lost while flying a rescue mission) who headed the Air Rescue Unit, and to his successor, Lieut. William M. Powell, and to the diligent work of intelligence officers, Maj. Robert L. Wright, Capt. John G. Nesbitt and Capt. H. M. Smith.

Anything can happen on the Hump run. One C-47 accomplished the impossible and flew a two-ton load over the Hump at 24,400 feet; Lieut. Fred K. Darragh was the pilot. Maj. James E. Laubaugh dragged his loaded C-87 up to 27,000 feet to escape unflyable weather at lower altitudes. Capt. K. J. Breitskopf did a half loop with a C-46 when his plane suddenly was flipped on its back in the midst of a severe storm. He came out of the loop far below the mountain peaks but climbed back to altitude and safely returned to his airdrome. C-46s have flown at 22,000 feet to avoid icing while some planes have staggered over the Hump at 95 miles an hour, landing with warped and bent wings—but the supplies have reached China in ever-increasing quantities. The return trip to India presents its problems, too. Loaded with raw materials, engines for overhaul, personnel, mail and hog bristles, the planes must take off with heavy gas loads at 6,000 feet altitude – no easy task for any heavily loaded plane. Between flights, crews hardly have time to order eggs and tea and purchase peanut candy at the familiar Chinese cafeteria before taking off for India, because ATC has a rule that planes shall not remain on the ground in China for more than one hour. After this brief rest, the crews start their return trip to Assam where more supplies and new crews are waiting to fly the Hump. Occasionally, some planes fly three round trips a day, hardly letting their motors cool until ground crews make their 100-hour inspections.

Such continuous flying would not be possible without competent mechanics. Their rapid and efficient maintenance and repair have increased the percentage of flyable planes from 50 to 75 percent. In the month of December, they made more than 100 engine changes; it wasn't a record, simply normal operations. A plane that is grounded may be robbed of parts to put another plane in the air, but when its turn comes to fly, a newly-grounded plane contributes the missing parts. To obtain supplies of replacement parts, Capt. L. E. Hubbard, engineering officer, has flown as many as 110 hours a month, scouring India's airdromes and depots for scarce but vitally needed accessories, rather than delay operations by sending planes back to depots for engine changes and heavy maintenance. The ground crews improvised equipment and proved they could successfully change landing-gear struts and replace gasoline tanks—even though it meant taking the wings off the planes—and at the same time build their own engine hoists, slings and crew chief stands out of steel hangers and bamboo.

This amazing air-cargo center absorbs its supplies from river boats, trains and air priority shipments like a sponge. After receiving supplies from the Services of supply, ATC then bundles them into its planes and squirts them across the Hump into the hands of the men whose success in stopping the Japs from encroaching further on Chinese soil has depended completely on this one and only supply route to China.

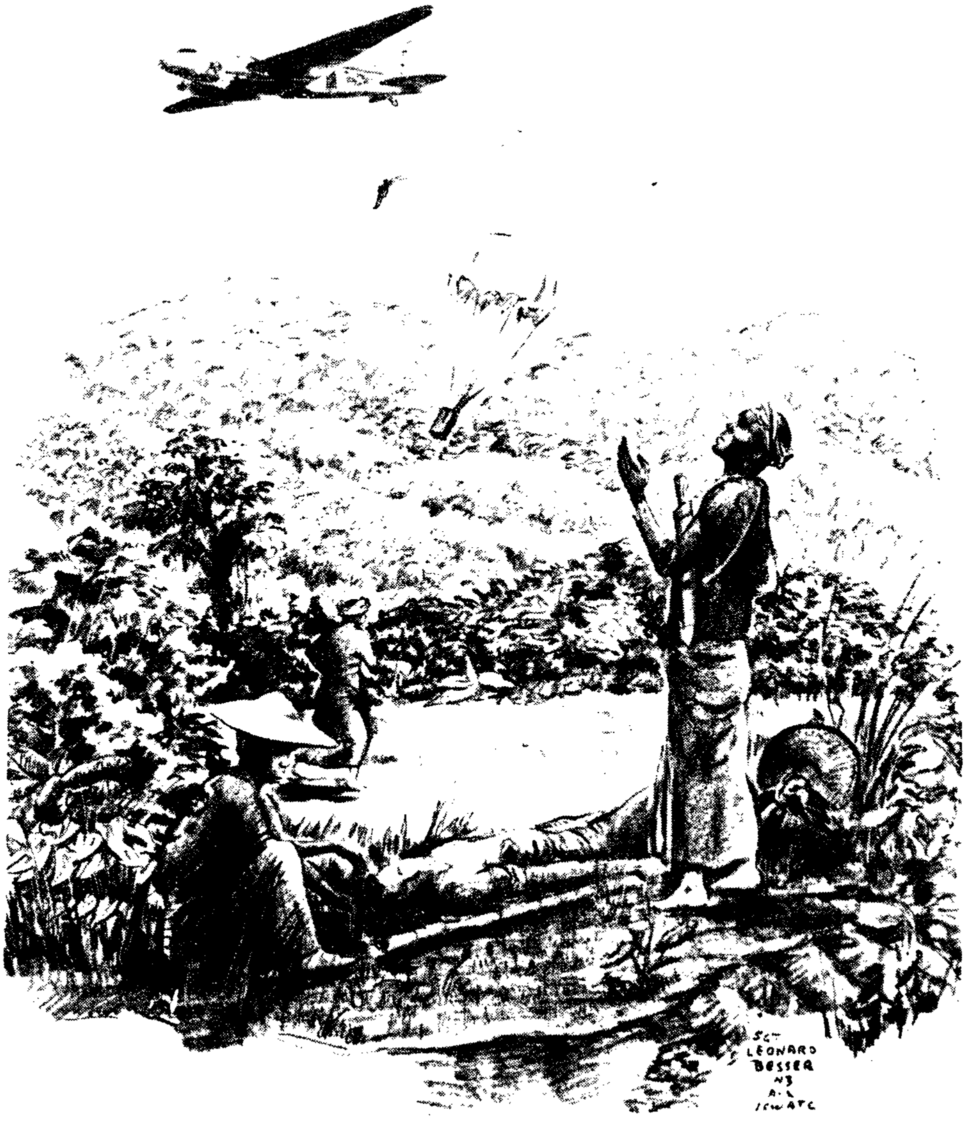
Emergency shipments from the United States to the opposite side of the world can be made in as little as four and one-half days from Air Service Command headquarters at Patterson Field. Four flights leave Patterson every week with capacity loads of urgently needed parts and supplies. Less than one week later, the C-87 cargo planes of the fastest and longest air express service in history unload their cargo in Assam to help keep ATC planes flying. Today's expeditious handling of thousands of tons of war cargo by air reflects many months of hard labor by ATC personnel; the India-China Wing didn't just grow like Topsy, it pulled itself up by its own bootstraps.

It was in March, 1942, that the Commander-in-Chief promised China that aid would reach her despite Japanese penetrations that were closing off the last supply routes from the outside world. One month later, Lieut. Col. (now Brig. Gen.) William D. Old flew the first load of supplies over the Himalayas to China. His ship represented a large fraction of the total air cargo strength at that time—a handful of DC-3 planes. Brig. Gen. (then Col.) Caleb V. Haynes was commanding officer of the new unit; General Old was his executive officer. Twenty-five more planes soon were requisitioned from commercial airlines in the States, but not all of them reached India. Some were needed to supply the forces attempting to stop Rommel's push to Cairo.

A few Pan American planes, which had been operating on African routes, were flown to India with crews who joined the Wing. With this small transport organization, pilots flew from a single airdrome in Assam. Without modern navigational aids, they braved the monsoon storms to fly supplies to China. Four fighters borrowed from the AVG and the China Air Force constituted the complete protection for the lumbering planes that were flying at altitudes far above their theoretical design limitations. During these days, Burma was being evacuated, so the transports would carry their bombs and gasoline into China and then pick up evacuees in Burma on the return trip. One of these planes exceeded its normal load capacity 300 percent when it jammed 75 people in and safely flew them to India.

With the initial problems bested, the organization was placed under the command of Maj. Gen. Clayton L. Bissell (then Brig. Gen.), commanding officer of the newly organized 10th Air Force in India. Under General Bissell, additional airdromes were constructed and more planes were assigned to the Hump run. After four months of operation as part of the 10th Air Force, the Air Transport Command adopted the unit as the India-China Wing. Brig. Gen. E. H. Alexander (then Col.) commanded the new Wing for the ensuing ten months. During these months the scope of operations by the Wing steadily increased. There were difficulties, such as supervising operations at several airdromes when highway transportation was impossible because of rains, and when remaining communications hinged on the maintenance of two telephone lines. Two of the fields practically washed away in the rains, but the major difficulty of getting more cargo to China made other problems seem trivial.

This sketch by Sgt. Leonard Besser of the India-China Wing of the ATC portrays a parachute jump by a medical officer who was summoned to aid surviving crew members of a C-46 which had been shot down by a Jap Zero while flying the Hump. Medical supplies also go down by parachute.



To increase the pay load of flights, the new Curtiss Commando was drafted into service on the Hump run in early 1943. Being a brand new plane, it developed the usual series of ailments but our GI mechanics, with few tools and fewer spare parts, devised many rough modifications at their advanced bases to keep the planes flying. To increase cargo capacity further, C-87s were assigned to India for the run. Their increased altitude performance contributed greatly to the steady increase in the number of flights into China.

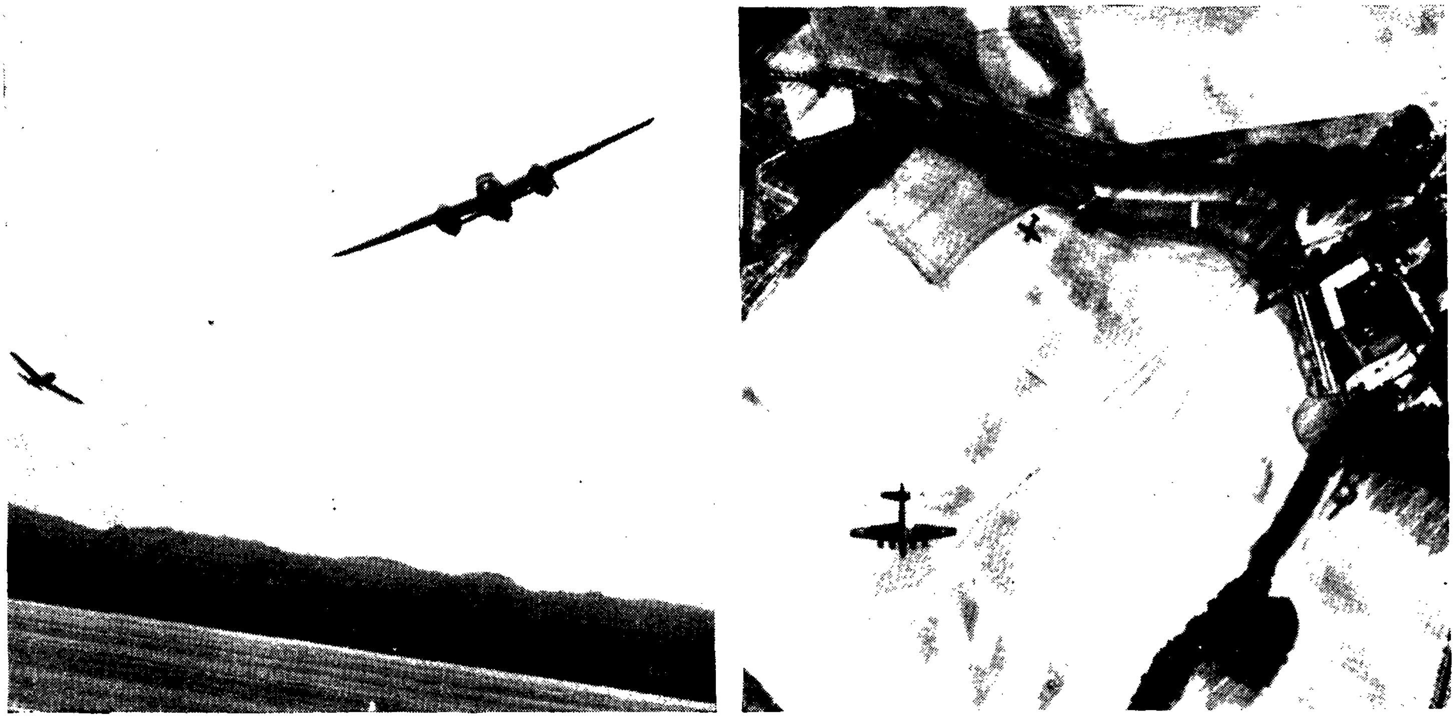
Actual loading and tying down of freight, and other functions performed by attached service units, were taken over by ATC personnel during the expansion spurt that followed a late summer inspection tour by Maj. Gen. Harold L. George, commanding general of the Air Transport Command. By October, 1943, the India-China Wing had grown so large that it was subdivided. The eastern sector in Assam was assigned all Hump problems; the western sector, administration of air traffic throughout the rest of India.

With the return of General Alexander to the command of another wing in America in late September, Brig. Gen. Earl S. Hoag, who had commanded the Africa-Middle East Wing of ATC during the North African campaign, was assigned as commanding general of the India-China Wing. Col. T. O. Hardin, who supervised the operation of formerly German-operated airlines in South America after their banishment, now commands the Hump sector. Col. Kenneth C. McGregor heads the Western sector.

Under the aggressive leadership of these men, figures of tonnage being flown over the Hump began to rise. The many months of war-supply famine have been alleviated and our forces in China are more firmly entrenched than at any time since the outbreak of war with Japan.

In the words of the Commander-in-Chief to General Hoag: "I have been informed that . . . your command transported . . . tons of vital supplies over the Hump into China for the month of December. This represents an exceptionally outstanding performance and is a source of great gratification to me. The goal has been high, the air route exceedingly dangerous, both as to mountains and enemy action, and the weather treacherous. Only teamwork and outstanding devotion to duty by the entire personnel could have made this accomplishment possible.

"I have directed the citation of the Wing and desire that my personal thanks be communicated to every officer and man concerned." ☆



These action photos depict enemy fighter plane interception in two far-removed theatres of our air operations. The Jap Oscar (left) makes a futile pass at a low-flying B-25. Both planes broke away without damage. Not so with the B-17 in the photo at the right. A FW-190 moves in for the kill as flames trail from one engine of the crippled bomber.

This is Your Enemy

Tow Bombs. Towing a bomb, suspended by a cable below and behind a fighter plane, is one of the Nazis' latest tricks used in attempts to break up our bomber formations. This one hasn't worked very well thus far.

When the Germans try it in daylight, they usually put a large bomb at the end of a long cable. Such a bomb could do a lot of damage to a tight bomber formation. The plane towing the bomb normally attempts to get in front of and above the bombers under attack.

For night fighting the Germans have been using a shorter cable and a considerably smaller bomb. The pilot of the towing plane merely flies near a bomber formation and apparently hopes something will happen.

On one raid, a cable suspended from an enemy fighter became tangled with a B-17 and the right bomb bay door was blown in and torn off.

Throw Up Violently. The Japanese have a new mortar with which they put up an anti-aircraft barrage. It has a range of from 3,000 to 4,000 feet, and the Japs call it the "Throw Up (Violently) Delay Barrage Mortar."

It is a 70 mm, smooth bore mortar, four feet long and mounted on a wooden base plate to which is attached an iron rod about eighteen inches long and an inch thick. The weapon is directed by the manner in which the rod is stuck in the ground. There is no way of transversing or elevating the weapon. When the men firing the mortar wish to lay it in another direction, they have to pull up the iron stake and start over.

The ammunition is fired after it is dropped into the mortar. The projectile consists of seven cannisters and two sections of the projectile case, which, when they reach a set altitude, are carried away on small parachutes. The cannisters, in turn, eject high explosive shrapnel tubes which detonate violently.

In all, a total of sixteen different elements are obtained from one projectile, and a total of fifteen explosions may be seen from one shot.

The shrapnel tubes are the major hazard of the weapon since they are the only parts containing high explosives. The fragments are so small, however, that they are relatively ineffective. It is estimated that the blast is effective at a maximum radius of ten yards.

Delay. The Japs have begun using a delayed action bomb. One of them, recovered in the Southwest Pacific area, was 8 inches in diameter and 44 inches long. It weighed 138.6 pounds.

The fuze on this bomb had worked, but it hadn't been screwed into the booster tight enough to cause the bomb to explode. This type of bomb has been known to have a delay of up to 127 hours. When an unexploded bomb is found in an area, unit COs should evacuate all personnel until bomb disposal officers pronounce the locality safe.

More on Rockets. An ME-109-G-6, abandoned in Italy, had two rocket projectors, one under each wing outboard of the wheel recesses. The "guns" were of quite simple construction. Each consisted of a large tube made from 3/32-inch steel. The tube is open at each end and suspended from a heavy steel hook attached to the main wing spar.

The rocket is prevented from slipping out of the tube when the plane is in flight by a bolt projecting inside the rear of the tube and by two springs at the sides. The projectors can be jettisoned at will by a detonator fired electrically from a switch inside the cockpit. The projector complete with rocket can be dropped.

The rocket itself also is fired electrically by pressing a button on the control column. Normally, only one rocket is fired at a time. The projectile is fairly heavy and has a standard fuze, adjustable on the ground only. This is likely to give the rocket a range well beyond our .50 caliber guns. The rocket has no fins. Its propelling venturi tubes are offset at an angle so that the rocket rotates in flight and has stability.

The Germans probably won't get much accuracy with this weapon because, for the safety of the carrying plane, it must drop a short distance before its propelling charge starts to fire.

The Germans, however, are reported to contend that it is not necessary to hit or even damage individual planes with the rocket: what they wish to accomplish principally is break up formations and make our bombers vulnerable to fighter attack.

The projector can easily be adapted for other aircraft. Single engine fighters can carry two, and twin engine fighter-bombers can carry four of the tubes.

BLURB. Japan's War Ministry recently distributed some information about some of its new planes. The publicity hand-out printed in a Jap-controlled paper contains a few gems about the Shoki (Tojo) and the Donryu (Sally Mk II). This is a translation:

"The Shoki fighters have a brilliant record of having shot down the best American and British planes. Their inspiring shapes can now be seen over the Burmese front and over the American bases in China. They take pride in their supreme performance both in ascending, circling and other points.

"Whereas American or British bombers cannot enter a zone of Japanese airpower in daylight without being escorted by fighters, the Donryu bombers majestically appear over enemy positions unescorted in broad daylight and release deadly missiles on the panic-stricken enemy. This is something only Japanese airmen can do and only the Donryus can attempt. The Americans are vaunting the prowess of their Dragon bombers but as their name implies the Donryus can swallow even Dragons. In the Malay campaign, while enemy bombers were attacking Japanese convoys under escort of fighters, the Donryus singly or in groups of only a few planes thrust into the midst of the huge mass of enemy bombers and scattered them and succeeded in protecting the convoys. It is these Donryus that are so frequently pounding Port Darwin. The Donryus look something like some of our Navy planes and the enemy often found it difficult to make the distinction. Their distinguishing feature is the split tail through which machine guns may be fired. The well known cartoonist, Ippei Okamoto, has donated to the Army a picture in which the legendary demi-god Shoki is grasping Roosevelt by the nape of his neck and trampling Churchill under foot to symbolize the triumph of the Shoki fighters over British and American planes, a pun being made on the words 'ki,' planes and 'ki,' devils."

Editor's Note: The "Dragon" is the Jap nickname for our B-17. The Shoki (Tojo) is relatively new, the Donryu (Sally, Mark II) relatively old. The Buffalo fighter hasn't been in general use since the early months of the war. The Malay campaign is now two years old. The Japs haven't "pounded" Port Darwin *in many a moon*. The Japs must be hard up for propaganda editors.

AIRCRAFT NOTES. The Germans are using a jettisonable fuel tank made of paper produced from kraft pulp. The inner layer of the material is made of woven paper yarns, laminated on both sides with crepe paper of the sort used by Germans for paper anti-gas capes. The coating adhesive between the three-ply wall is thought to be a cellulose nitrate lacquer. This is another instance of the Germans using cellulose and derivatives to get sufficiently strong materials with minimum weight.

The new Jap Tojo fighter looks considerably like a P-47, although more like a P-43. A Zeke examined recently had a de-icing arrangement for the propeller. It worked by use of a priming pump; a stroke forces a de-icing fluid from the pump to slinger rings on the propeller hub which distribute the fluid along the leading edge of each blade. The pump is hand operated.

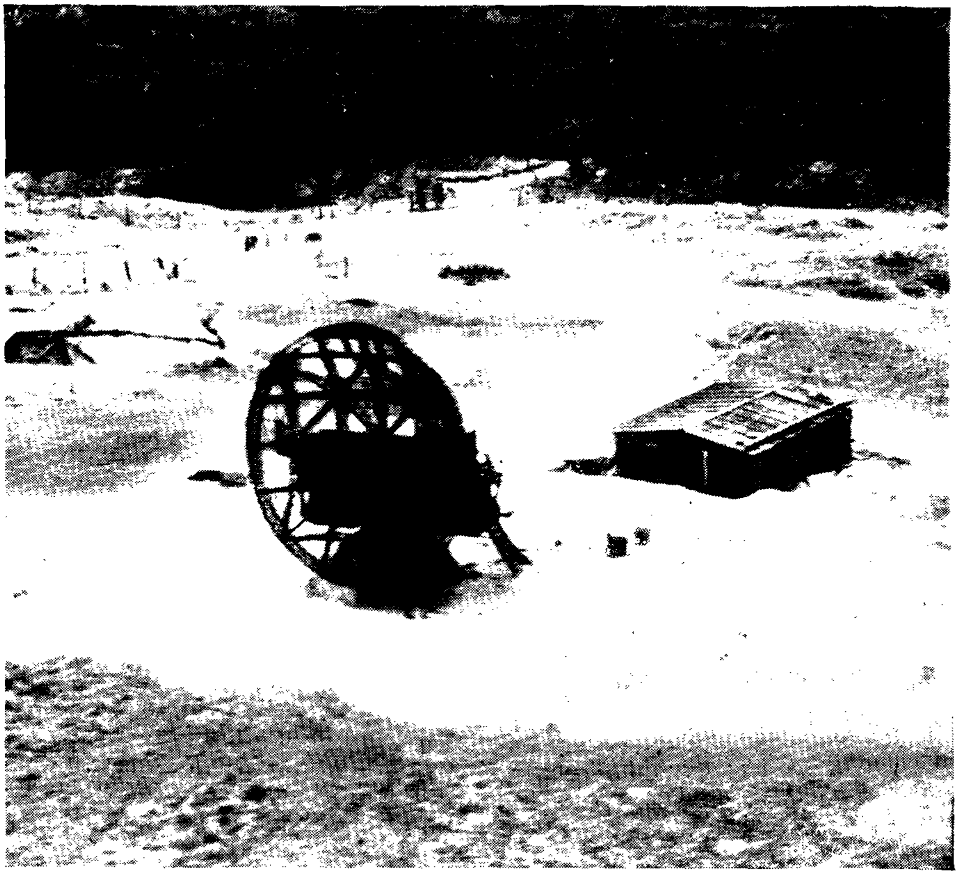
BEAUTIFUL THOUGHTS. Following an ancient custom, one Jap soldier celebrated his 25th birthday by writing a poem. It might be explained that Japanese poems are peculiar gadgets, being short and designed to give a fleeting, single picture. This Jap told his diary:

> I vow an oath
> Walking on danger,
> I have crossed over flower
> beds and cliffs.

Eventually the writer's pen was stilled by some American machine gun slugs. The last entry in his diary was this list *of admonitions from his commander*:

1. Must die beneath the battle flag.
2. Must positively die desperately in battle.
3. Must fearlessly carry out orders in battle.
4. Be sure to name the important duties of the commander. Improve determination.
5. Do not ease mind at night. ☆

This giant German Wurzburg radio detection device, set up in Western Europe, registers the presence of aircraft within a radius of eighty kilometres. It also is employed in plotting fighter interception of Allied bombers.



CROSS COUNTRY

Continued from Page 5

and over the tape they wrapped a gauze bandage. Their Marauder, Old Ironsides, made a normal landing at its North African base.

CIRCULATION

Those persons charged with the distribution of AIR FORCE to our squadrons all over the earth, perplexed with unit changes and continually striving to get the magazine to as many men as possible, and in the quickest time, may find a sad kinship with the Australian counterpart. The circulation department of "Wings," the RAAF magazine, received this note from one of its far-flung squadrons which had just received its parcel of that journal:

"Never have so many waited so long for so few."

PULLING STRINGS

Among the booby traps encountered in the Italian campaign was an airfield building, the cellar of which was stacked with cases of gin and Scotch whiskey. This stock of superb drinking liquor had been so thoroughly booby-trapped by the Germans, however, that the entire building had to be demolished- but not until the engineers had determined that they could not avert the catastrophe. The booby trap was first discovered by a private of a Highland regiment who emerged from the cellar flushed and happy. He wore the expression of a man who had found contentment in the world, and in his hands he proudly waved two bottles of Vat 69. When accosted by engineers, the Highlander explained: "Ye know, I could na' understand why a' the bottles were tied up wi' bits o' string."

NOW WE KNOW

Several chaplains quite properly have called our attention to an inaccuracy in the quiz feature of a recent issue of AIR FORCE. The question: "A chaplain with the rank of major can properly be addressed as either Major Jones or Chaplain Jones. True or False?" We inaccurately gave the answer that the chaplain may be addressed by his military rank. Army Regulation 60-5, paragraph 5, states that the uniform designation of a chaplain in official address is Chaplain.

ALOOF LITTLE THING

In Aden, Arabia, one of our far-flung reporters came upon an interesting notice of general information addressed to all transient personnel. It was signed by Lieut. Philip A. House, assistant station traffic officer. Seven points of the information follow:

1. This is Aden, Arabia, situated on the southwestern tip of Arabia. You are now half way around the world. Aden is not in Africa.
2. The natives are friendly in the immediate vicinity.
3. The temperature seldom rises above 100 degrees F. The heat you feel today is attributable to the high humidity.
4. Money used in Aden is the same as that circulated in India. The monetary basis is the Indian rupee evaluated at 3.3 rupees to the American dollar.
5. There are no harems open to the public. The Mohammedan religion also prohibits Americans from buying wives.
6. The latrine is about 100 yards directly in front of the gate to the field. It's the little grey building standing by itself. You can't miss it. Don't, please!
7. Permanent personnel will be glad to answer any questions not covered by information posted here. Permanent personnel can be identified by the small red blotches on their bodies. They do not have the measles. It is prickly heat; it itches like hell, and we would get rid of it if we could.

PRAYER MEETING

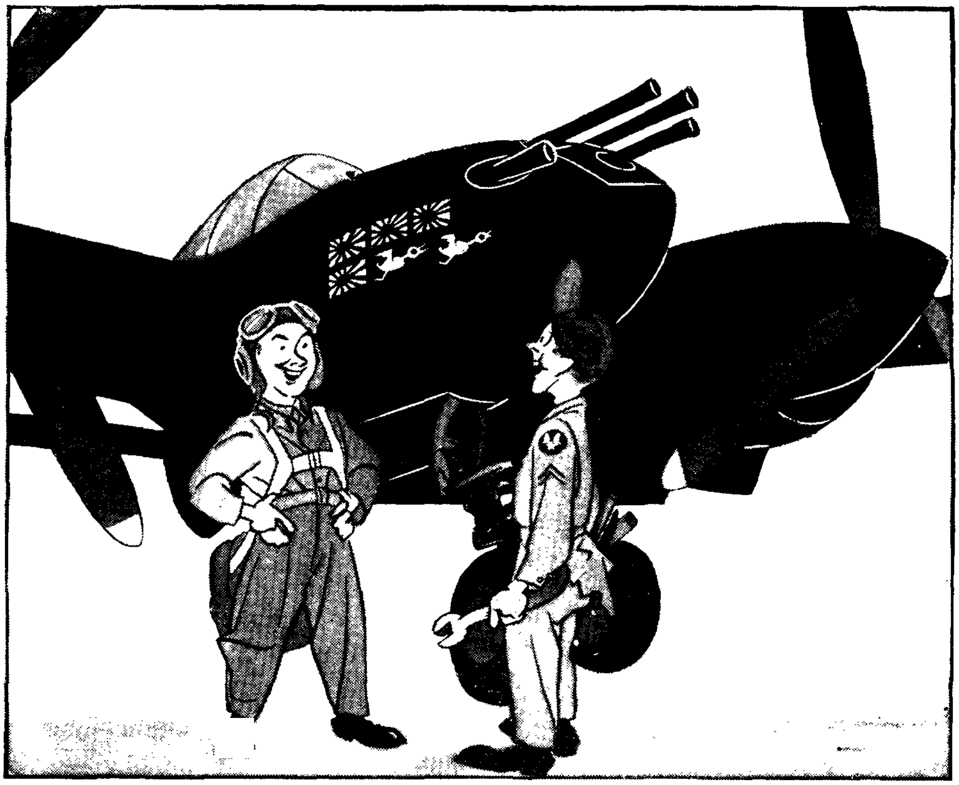
The story about all atheists being AWOL from the foxholes has been told in other words by the crew of a B-26 which ran into a particularly bad time over a strongly protected German airdrome. The group attacked successfully but the flak was so intense that some flyers thought it contained even the sauerkraut barrels. Naturally some of the planes were badly hit, these including the Marauder piloted by Lieut. Richard H. Lightfine. The plane returned to base, one crew member said, only because Providence had assisted them when it seemed as though nothing else would help. "The Reverend Lightfine held church services while we were over the target," the gunner explained.

COLONEL GREGORY HONORED

Col. Hollingsworth F. Gregory has been chosen as the first recipient of the Thurman H. Bane award, given annually to the officer or civilian of the AAF Materiel Command for an outstanding achievement in aeronautical development during the year. Colonel Gregory, project officer on helicopters, was selected "for his contribution to the military and commercial development and use of the helicopter."

CREW SAVES DINGHY!

George B. Alfke, now assigned to instruct heavy bombardment pilots, has doubtless been sorely tried in his day, but by nothing worse than an annoyance which befell him while serving with the Eagle Squadron early in the war. He was flying a Wellington back from Crete when Italian destroyers shot up his oil lines. About twenty miles out from El Daub, then held by the Germans, an engine froze and one of the propellers sheared off. Lieutenant Alfke brought his plane down on the water at 75 miles an hour and the crew started to get out. The first hitch came when the rubber dinghy which was supposed to release automatically through reaction with salt water failed to function. With the aircraft sinking rapidly, the crew tried to pry the rubber boat loose with the manual switch but that was



—J. T. RAWLS AND PFC. R. R. RIEKER

"This week I knocked down four Nakajimas and two ducks!"

no good either. Just before the Wellington went under, however, they managed to break out the dinghy—only to find that it was not inflated.

The big plane swirled under and the crew treaded water for nearly two hours, holding the dinghy above their heads as they pumped it with a hand bellows. Just as they got it inflated and climbed aboard a rescue plane came into sight and they fired a roman candle to attract attention. The plane failed to see the signal but a spark from the candle burned a hole in the dinghy and it collapsed. The men began pumping again and continued for eight hours until they were located by a British amphibian plane. When they were finally aboard the aircraft, the sea was too rough for a take-off. They taxied for three hours in broad daylight, and through German controlled waters, back to base.

NO MORE BOX CARS

After the last war the thing that our fathers seemed to cling to with a venomous affection as a symbol of their toil and trouble in France was the four-wheeled freight car—the 40 and 8—quarante hommes et huit chevaux. On to this car, marked to carry forty men and eight horses, they attached all their memories of mud and glory, of good times and bad.

"So what are we going to have?" writes a captain from Africa. "What AAF symbol in the years to come will satisfy the aging Liberator pilot, the communications sergeant who has begun to add stomach, the balding mechanic? What symbol will serve to bring back painful and enchanted memories to the GI and the general alike?"

Our correspondent seems to think that bucket seats may be a contender for the immortal honor. At least he submits that as a start. AIR FORCE is open to suggestions and will be glad to report the modern interpretation of the old 40 and 8.

VETERANS' BENEFITS

Delay between the time a soldier is discharged for physical disability and the time he begins to receive a pension or other benefits will be eliminated by a joint undertaking of the War Department and the Veterans Administration. Authorization was made recently to assign Veterans Administration personnel to Army installations in order to speed up the filing of claims for veterans' benefits, the War Department has announced. Such administration is already operating at Walter Reed General Hospital, Washington, D. C., and lessons learned from this experiment will be extended to other military installations where disabled soldiers are being discharged. Consequently, before a soldier actually leaves the Army he may receive competent advice on the merits of his claims and also a decision on them.

An arrangement has already been worked out whereby mentally ill persons, who require further treatment in Veterans' Facilities, are discharged by the War Department into this care by one contemporaneous action.

Blinded personnel will be retained in the Army in order to complete their social adjustment even though no further hospitalization is required. This social adjustment training is coordinated with the Veterans Administration so that the vocational training will continue without serious interruption. At present there are other proposals under consideration, one of these being a booklet which will explain in simple language to the enlisted man his rights as a veteran.

It is the purpose of the War Department to see that as many service connected pension claims as possible are adjudicated before the person is discharged from the Army. However, there is no way that a soldier can be compelled to file a claim for pension benefits, although his rights in this regard are brought to his attention by the War Department. In this connection, each disabled soldier who does not desire to file such claim is required to file a statement to that effect. Such a statement is not a waiver in any respect of his right to file such a claim at a later date. Where it is the soldier's desire to file such a claim, the War Department cooperates in every way practicable to perfect the establishment of his eligibility.

PICTURE CREDITS

SECOND COVER: 7th Air Force. FOURTH COVER: T/Sgt. Roger Coster, AIR FORCE Staff Photographer. 12-13: U. S. Navy. 10: Silvers, Shreveport, La. 12: Bachrach. 13: Harris and Ewing. 52-53: AFTAD. All other illustrations secured through official Army Air Forces sources.

Requests for prints of photographs appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, Army Air Forces, Washington, D. C.

PARACHUTES: LOST AND FOUND

Lost:

No. 42-326214, seat type. Return to Sgt. David A. Nelson, ASN 20720923, 479th Bomb Sq., 336th Bomb Gp., Lake Charles Army Air Field, Lake Charles, La.

Nos. 42-397109, 42-304755, Type S-1; return to Station Operations, Strother Field, Winfield, Kan.

No. 42-209232, seat type; return to Parachute Department, 505th Fighter Bomber Sq., 339th Fighter Bomber Gp., APO 182, Unit No. 2, Los Angeles, Calif.

No. 42-429986; return to Office of the Base Operations Officer, Army Air Base, Drew Field, Tampa, Fla.

No. 42-221019 and one B-4 type bag and contents. Return to Lieut. James Frey, Kingman Army Air Field, Kingman, Ariz.

Nos. 41-12325, turned in at Romulus, Mich., and 41-12320, turned in at Congaree AAF, Congaree, S. C. Return to Base Operations Officer, Key Field Army Air Base, Meridian, Miss.

Found:

Nos. 41-30164, 42-235748, 42-239178, 42-245266, 42-246153, 42-270809, 42-272562, 42-299142, 42-333583, 42-398731, 42-406771, 42-441492, 42-626934, 42-649044, 42-735955, all Type S-1; 39-2230, 42-466540, 42-85838, all Type S-2; 42-574415, Type QAC, AN6513-1; 42-540429, Type QAC, AN6513-1A. Communicate with Air Inspector Technical, Headquarters Salt Lake Army Air Base, Salt Lake City, Utah.

No. AN-42-329953, communicate with Office of the AAF Representative, AAF Materiel Command, Boeing Aircraft Co., Plant 2, Seattle 14, Wash. Attention: Lieut. Duncan S. Coombs, Property Responsible Officer.

'SUPERIOR EFFICIENCY'

The 480th Antisubmarine Group, AAF, has been cited for outstanding performance of duty in action with the enemy during the period from Nov. 10, 1942, to Oct. 28, 1943, in the European and North African theatres of operations. The 480th Group was the pioneer organization in the AAF offensive antisubmarine operations in the Eastern hemisphere and, from the beginning of the AAF Antisubmarine Command (activated Oct. 15, 1942), it led AAF forces in the fight against the U-boat, carrying this action to the home waters of the enemy. This action contributed significantly to the success of United Nations operations in North Africa and to the invasion of Europe.

"The group participated in all phases of the Battle of the Atlantic and defeated the enemy above, on and below the surface of the sea," the citation states. "Its activities reached a climax in the second week of July, 1943, when the enemy made every effort to thwart the supply and reinforcement of our forces then undertaking the invasion of Sicily. In the nine days between July 6 and 14, inclusive, airplanes of this organization made twelve attacks on enemy submarines, eight of which resulted in the destruction of, or probable damage to, the enemy. The authorized airplane strength of the Group was 24 B-24 type bombers. Over a period of twelve months this small force sent its airplanes out over the convoy and shipping lanes leading to Europe and North Africa on missions extending as far as 1,250 miles from base and lasting as long as seventeen hours. Flying alone and often heavily outnumbered the 480th Antisubmarine Group's airplanes encountered prowling JU-88s and FW-200s, and attacked and defeated them in air battles over convoys and when on patrol. Although outnumbered in these battles in the average ratio of one to three they destroyed two enemy airplanes for each one of their own aircraft lost. Its killed and missing personnel number 101 officers and men, nearly fifty percent of its authorized strength (2[illegible]). The 480th Antisubmarine Group has contributed with heroism and superior efficiency to the winning of the Battle of the Atlantic. Its record is inspiring and worthy of emulation." The citation was signed by General G. C. Marshall, Chief of Staff.

MERELY CONSPICUOUS

At ten o'clock that morning the entire bomb squadron stood at formation to witness the unmasking of a soldier, a painful and impressive ceremony to behold. A member of the squadron had been picked up while wearing eight medals and a pair of wings—all of them unearned. The arrest had been made in Spokane while the young man was on pass from Geiger Field, Wash. He had been returned to the squadron to be shorn of his adornments, the air medal, the wings, the Distinguished Flying Cross, the Pearl Harbor Medal and others.

Even before this unhappy occasion many of the boy's comrades had heard him tell of enlisting in 1937, of his heroic presence at Pearl Harbor, of his combat exploits in the Solomons. Yes, they had even heard him speak bravely of old wounds and make modest mention of the Purple Heart. The squadron clerks knew him as a technical sergeant since his mail came addressed that way. Under these auspicious circumstances the youth was brought before his squadron and revealed as a private, first class, who had been in the army less than a year and had seen no combat.

After the true facts had been described, the commanding officer slowly itemized the medals upon the crest-fallen chest, and a master sergeant removed the decorations one by one. A week before this soldier was unmasked, a staff sergeant from the public relations office had approached him and suggested an interview.

"Oh, let others have their cheap publicity," the decorated one shrugged. "I want none of it myself!"

PARTING SHOTS

A B-24, attacked by two Zeros, crashed into the water during a Paramushiru-Shimushu bombing mission. As the big plane landed the tail section broke completely away from the wreckage and remained afloat for a few seconds. When strafers swept the scene, the tail gunner continued a steady stream of fire at the Japs as his compartment sank out of sight.

Staff Sgt. Ben B. Colecchi of New Castle, Pa., is now listed as missing in action. Orders proclaim his courage and fighting spirit in keeping with the finest combat traditions of the AAF.

—THE EDITOR.

Answers to Quiz on Page 19

1. (d) North of the Philippines
2. (d) Drop zone
3. (a) The vacuum caused by whirling propeller blades
4. (c) 41 feet
5. (c) Houston, Texas
6. (c) Maj. Gen. Nathan Twining
7. (d) Ten minutes after the hour set for an attack.
8. (b) False. Approximately a half of the noise comes from the whirring propellers.
9. (c) An air route between India and China
10. (a) Constellation
11. (b) Green
12. Red and White
13. (b) A maneuver in flight
14. (c) Officer Candidate Jones
15. (c) In front of the middle of the ear
16. (b) Anti-personnel bombs
17. (a) New Britain
18. (c) New Delhi

MISTAKES IN 'ON THE LINE' PICTURE ON PAGE 50

1. What, no chocks? It would be too bad if one wheel locked and the other didn't. The brakes are supposed to hold, but it could be the parking brake might slip. Find all the facts in TOs 19-1-50 and 01-1-50 as well as AAF Reg. 62-10.

2. That piece of cowling on the ground may be caught up in the air scoop. And Form One, lying in the snow, *must* be in the cockpit! Warm-up can blow it away. And in the same breath, Sergeant, this is no time to retrieve a stray screwdriver — you're dangerously close to the rotating prop. Refer to AAF Reg. 15-1.

3. Although it appears to be a very cold day the crew chief must be a super-fresh-air fiend because he has left the cockpit door open. This boner can break the canopy besides endangering the equipment from the air blast.

4. Say, Sergeant, did you mistake an airplane wing for a park bench? That's no place to sit during an engine warm-up. And by the way, if you must look like a mighty warrior, get a Sam Browne belt or something, but don't sling cartridges over your shoulder in such a dangerous spot. Reference: Common sense.

5. The elevators are down when they should be neutral. Blast from the prop may nose you over, or force the nose of the plane down causing the prop to hit the cement. Check up with TO 01-1-29.

6. This above all: Remember to set the airplane at least fifty feet away from the hangar for a warm-up. If you don't lots of damage may be done, such as the prop blast injuring or destroying property or the sudden blast from 1,500 rpm demolishing a Piper cub unexpectedly going in or out of the hangar door.

7. Only a yardbird would miss this one. There is no fire extinguisher evident. Men, this is really important. It is a grim hazard to run up an engine without the standard precaution of having a fire extinguisher close by.

OUR JET PROPELLED FIGHTER

Continued from Page 8

Since the compression ratios are lower than in reciprocating engines, special high octane fuels are not needed because no detonation problems exist. Anything that burns, from kerosene to Napoleon brandy, can be used. We will not give performance figures, but we can report that we are satisfied—as satisfied, that is, as any engineers ever are with a new device. It opens up a new field of high propulsion. Engineers are working on improvements and will do so as long as there are any airplanes.

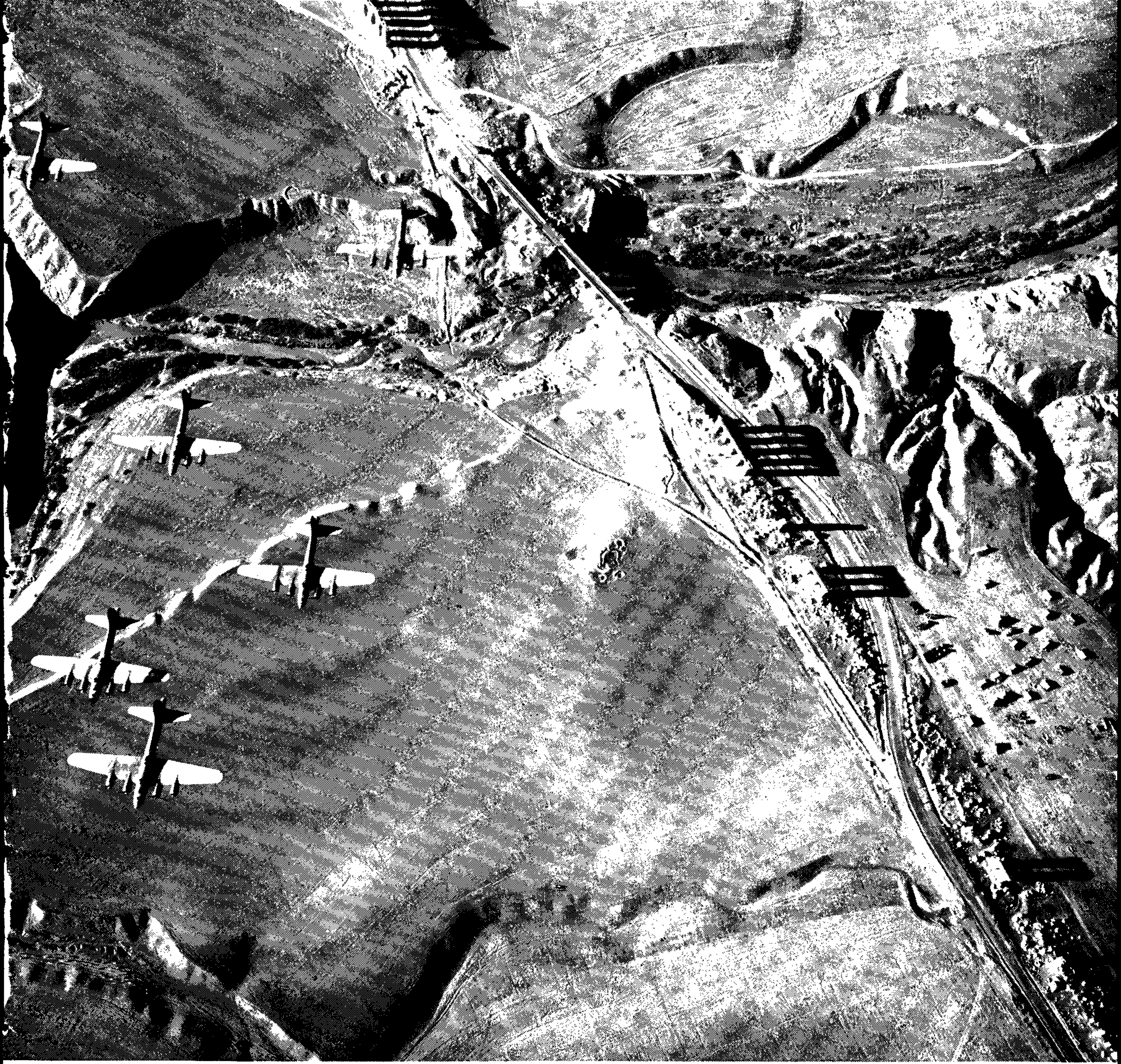
The jet propelled engine presents no new problems to the pilot except how to fly a simpler airplane. While the turbine operates at a cherry-red heat similar to a turbo-supercharger, the gases are not flaming as they leave the nozzle. (You shouldn't stand directly behind the nozzle, however, any more than you should walk into a propeller). The number of gadgets and dials in the cockpit are cut down considerably from the number in the conventional fighter plane. One throttle does all the work, forward to go, further forward for greater speed, back to slow down or stop. The aircraft is built low to the ground because there is no ground clearance to provide for the propeller and it is therefore much easier to work on than normal aircraft.

In flight, the plane makes a weird noise. When at some distance away, it sounds not unlike a train rumbling along, far away at night. Some people say it wails like a tired banshee. It does not make as much noise when it approaches as do propeller-driven planes. You seldom hear a jet propelled plane until it is almost past you. As it goes away you hear the roar of the jet.

There has been idle talk that the intakes of the engine might create such suction that a person passing too close might likely be pulled in and shot out the jet looking like a loaf of Spam. This is not so. However, it has been reported from England that hats and coats have gone through the engine when mechanics moved right up against the intake while the engine was screaming its warning during ground runs at high rpm. Another little legend about the "Squirt" started in England. It was that birds flying into the intakes emerged dressed and skewered, suitable for serving. The plane, which doesn't announce itself, *could* sneak up on a goose heading north, but that is not considered a problem since the intake ducts are designed so that miscellaneous objects are not attracted into them.

In the jet propulsion plane, which is now in production for training purposes, we have something we want—a fighting plane for high speeds and for high altitudes. We have a *jet propelled fighter plane* and it doesn't look a thing like that rocket ship with which we are going to wander off to Mars. ☆

Printed in U. S. A.

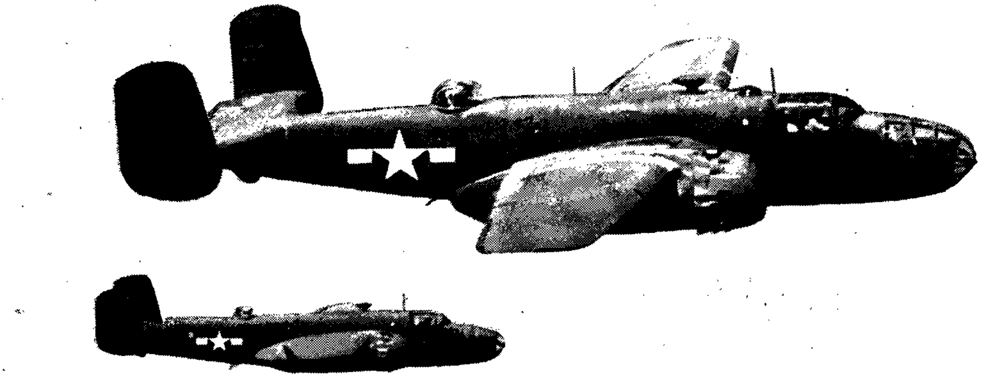


OUR BOMBING OFFENSIVE FROM ITALY

The crumpled aqueduct over which the B-17s in this photo are flying once carried water to Caesar's Rome. Now, 2,000 years later, the remains are sightseeing curiosities for crews of the heavy bombers of the 15th Air Force as they spring from Italian bases to blast targets in German-dominated southern Europe.

The 15th Air Force made its debut on November 2 in a raid on the Messerschmitt factory at Weiner Neustadt. The factory was severely damaged and fifty enemy planes were destroyed in the air. By January 11, the 15th had flown 78 missions and dropped 8,489 tons of bombs on strategic targets in southern Germany, Austria, Italy, Yugoslavia, Bulgaria and Greece. Among the targets which it had blasted effectively were ball-bearing factories, aircraft factories, submarine pens and other naval installations, railroad lines and marshalling yards.

Commanded by Maj. Gen. Nathan Twining, the 15th is the strategic air force of the Mediterranean theatre. Its operations are coordinated closely with the tactical 12th Air Force, headed by Maj. Gen. John K. Cannon. In charge of all allied air activities in this theatre is Lieut. Gen. Ira C. Eaker. ☆



WAR DEPARTMENT
HEADQUARTERS ARMY AIR FORCES
WASHINGTON

MEN AND WOMEN OF THE ARMY OF THE UNITED STATES:

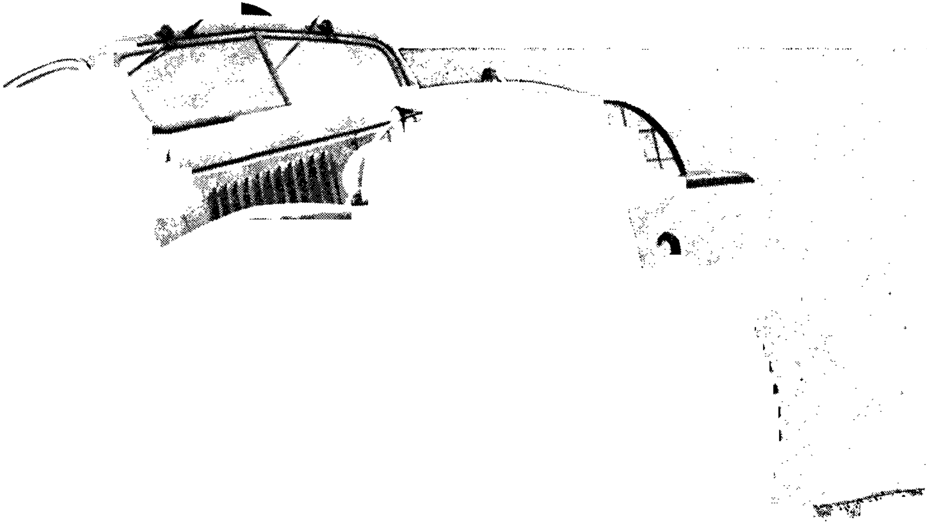
Americans are fighting a war on wings and wheels in every part of the world. To keep our global Army at peak performance, we need the men and machines of motor transport as never before.

Truck wheels are rolling up the world's last frontiers.

In 1918, motor transport was crude, but its only maintenance problem was the mud of French battlefields. Today, mechanized giants must blast new Overland Trails through jungles, cross high mountain ranges, and haul food, bombs and fuel across blistering deserts, in order that our fighters can attack the enemy by land and air.

The details of preventive maintenance have been prescribed to you. Any additional information you may need is available for the asking. For success in every theatre, we must depend upon trucks and must have responsible men to keep them rolling. That is your *stake* in victory.

HH Arnold

H. H. ARNOLD
General, U. S. Army,
Commanding General, Army Air Forces